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# *Gleanings in Bee Culture*

VOL. XXXV

MARCH 15, 1907.

NO. 6



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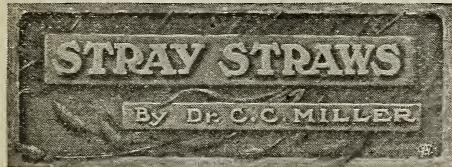
# GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees, Honey, and Home Interests  
Illustrated : Semi-monthly : One Dollar per Year  
Published by The A. I. Root Company, Medina, Ohio

Vol. XXXV.

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No. 6.



A MOUSE-NEST is to be seen at the back end of the bottom-board in a hive in my cellar. I am open to suggestions as to what is best to do.

IS NOT THAT picture wrong, p. 321? According to the description, the storm-door should come clear out, and rest on the front edge of the bottom-board: [You are correct.—ED.]

YE EDITOR, p. 332, commends a cover with dead-air space to keep things warm. I like mine for that, but that's only part. I like it to keep things cool when the hot sun is shining on it.

A. I. ROOT commends following hens as the best exercise for little chickens, p. 343. Locality again, Bro. Root. In this locality a hen would lose half her chickens in trailing them through the cold wet grass.

LOAF SUGAR fed in dry lumps was commended in *British Bee Journal*. I tried it, and it didn't work in this dry climate. I wasn't smart enough to sprinkle it with warm water, as does E. W. Alexander, page 315.

TOP ENTRANCES are suggested, p. 310, to prevent bees crowding the brood-chamber, thus preventing swarming. If that means field bees going straight into the supers, what about their loads of pollen in the supers? [Who will answer this question?—ED.]

MR. THOMAS W. COWAN, high authority in foul-brood matters, in *British Bee Journal*,

p. 41, files a caveat against calling black brood "European foul brood." Black brood is comparatively new in England, and he thinks it possible that Dr. White has made a mistake in saying it is caused by *Bacillus alvei*. [We shall soon publish Mr. Cowan's editorial and Dr. Phillips' reply.—ED.]

CAUCASIANS: "There is one thing wherein they excel all other races, and that is in propolizing," page 338. That's a new one, Mr. Editor. Now, the worst gluers I ever had were the worst at making watery sections. How is it with Caucasians? [This principle does not hold true in the case of Caucasians, if we are correct. Their comb honey looks a good deal like that made by the ordinary black bees of this country. If we are wrong we shall be glad to be corrected.—ED.]

NOT SURE that we've got to the bottom of that bottom-starter business yet, p. 307. I wonder if it isn't this way: Any one can get along without bottom-starters by crowding the bees enough; but it is more profitable to use bottom-starters than to crowd them so. Without bottom-starters, fastening to the bottom is about the last work done on a section, and with room enough it may not be fastened at all; with bottom-starters it is about the first thing, room or no room. [We take pleasure in accepting your amended statement.—ED.]

"THE PROBLEM in most cellars is not to keep the bees warm enough, but cool enough to prevent too much activity," p. 336. Yes, in your locality, Mr. Editor, but remember that you are on the southern limit of cellar wintering. [If the cellar is cool it is no problem at all to warm it up with a stove, or to let heat in from the furnace-room if a furnace is used in the basement. But if the cellar is too warm it is a real problem to cool it off if the outside temperature is 60 or 65. There may be more cool cellars than warm ones, but we can handle a cellar that is too cool better than one that is too warm.—ED.]

GLEANINGS for March 1 is quite a pure-food journal, isn't it? All the better. [We have been a little fearful that some of our subscribers might object to so much pure-food matter in our editorial columns; but it really seemed to us that the *very foundation* of the honey industry, and the prospect of better prices, lies in our State and national pure-food laws; and the more we can publish the fact by getting bee-keepers to talk it among their customers, the better will be our chances of advancing prices. We have more to follow on this subject, with the permission of our readers.—ED.]

BEESWAX and rosin to fasten foundation in brood-frames, p. 334. That means rosin in beeswax when the combs become old and are melted. Editor Hutchinson says there isn't rosin enough to do any harm; but I'd like to know what you foundation-men say about it. [Why, the rosin used is not a drop in the bucket, nowhere near it, to the amount of actual comb built in the frame; then when combs are cut out the knife hardly ever cleaves clear close up to the wood, where the mixture of rosin and beeswax was originally placed. No, we share the view of Editor Hutchinson.—ED.]

PROF. WILEY, at the National convention at Philadelphia, said in substance, "The Bible says, 'man can not live by bread alone.' That is a mistake; man *can* live by bread alone." I have never forgiven myself that I did not try to correct him then and there; and now our good Prof. Cook makes the same misquotation, page 312. "Man can not live by bread alone" is not to be found between the lids of the Bible. In Deut. 8:3 is found, "Man doth not live by bread only;" and Jesus, quoting, says, "Man shall not live by bread alone," Matt. 4:4, Luke 4:4. To say you *shall* not steal or you *do* not steal is a very different thing from saying you *can* not steal.

SPEAKING of zinc perforations, is it not true that different sizes are needed for different purposes? A queen, and especially a virgin, will make desperate efforts to squeeze through a perforation to go with a swarm, but will make very little attempt to go into a super through an excluder. I have seen many a queen make slow work going down between top-bars  $\frac{1}{4}$  inch apart.

P. S. Since reading what J. A. Green says, p. 339, I don't feel so sure about queens not going into supers through excluders. [J. A. Green is about right so far as our observation goes.—ED.]

NOW THAT zinc perforations are on the docket again, if they are to be made more than  $\frac{166}{1000}$  it would be handy to have  $\frac{166}{1000}^3$ , for that's exactly  $\frac{1}{6}$ . [There is no advantage in having the width of the slots  $\frac{1}{6}$  inch wide unless that width *happens* to be also just right for the bees. Perforations  $\frac{166}{1000}$  wide that sold a few years ago caused numerous complaints from the users of it. The  $\frac{166}{1000}^3$  is too near the danger limit. If  $\frac{166}{1000}$  is slightly too small, the increase of even  $\frac{1}{100}$  makes a great big difference—don't lose sight of

that fact. Our experience shows that  $165$  would be the limit. Zinc now turned out has perforations about  $\frac{164}{1000}$ , while last year it was about  $\frac{163}{1000}$ .—ED.]

CIRCUIT JUDGE S. R. Artman, at Lebanon, Ind., recently rendered a decision in which he held that the liquor-traffic, being a recognized menace to the welfare of the community, has no legal standing as an inherent common-law right of citizenship; therefore the legislature can not license it. Abundant authorities, State and federal, were adduced to show that gambling could not be legalized, and it was declared that these same courts had held the sale of intoxicants to be equally baneful. [This principle is being recognized everywhere now, and this one fact alone goes to show that our country is getting better. The time is passing when the saloons own the judges in many cities; and the further fact that brewery stock is falling in value in Ohio, and that the owners of the stuff are unloading for better securities, is another evidence that a better time is coming; for it is remembered that Ohio has been a strong hold of the liquor interests.—ED.]

W. WOODLEY, *British Bee Journal*, p. 24, speaking of the effort of the editor of GLEANINGS to convince me that English comb honey was selling at 48 cts. per 1-lb. section, says, "I contend that this quotation is entirely wrong. . . . The few parcels of English and Scotch honey which change hands wholesale at any thing over 1 s. (24 cts.) per lb., are few and far between, either sections or in jars." The bulk of good sections ranges in price from 12 to 20 cents each. The retail price, as proved by prices marked on sections in shop-windows ranges from 18 cents in cutting grocery concerns to 24 cents each in first-class dairy establishments. [We based our original statement on a controversy that appeared in the *British Bee Journal*. There were a number of reports that seemed to show that British heather honey of best quality was selling much higher than the same quality of honey in America. If we have made a wrong impression we are glad to be corrected.—ED.]

COMMISSION MEN, it seems to be assumed, p. 311, are naturally inclined to "bear" the market. If working on commission, pure and simple, I don't see why it isn't to their interest to "bull" it, for the higher the price the more the commission. [Yes-s. Theoretically you are correct; but the whole commission business is getting to be more and more tabooed, and the actual cash-sales plan is taking its place. More complaints have arisen over honey sold on a commission basis, a good many times over, than on cash sales. As a natural consequence, both sides, as a rule, especially where the parties are responsible and honest, prefer to make an outright sale. But it sometimes happens that a commission man soliciting commission consignments will not give the actual state of the market in his published quotations. For example, he may sell the honey for a good deal more than his bee-journal price or the

one on which his commission is based. Of course, his commission will be less. But how is the producer to know that he does not pocket the difference between the *actual* selling price and his *alleged* price? Let us take a concrete example. We will suppose Mr. Commissionman quotes his market on No. 1 comb honey at 15 cents. He secures a consignment of, we will say, 1000 lbs. When he makes his returns he bases his commission on 15 cents, or \$150. On a ten-per-cent basis, his commission will be \$15.00. Mr. Producer receives a check for \$150 less \$15.00, less freight and drayage \$5.00, or a net amount of \$130 for his honey. But suppose Mr. Commissionman sold this honey at 18 cents, how will Mr. Honey-producer be any the wiser if the other fellow says he sold it for 15 cents and pockets this three cents or the total amount of \$30? The honey-producer is not supposed to know to whom the honey is sold, and therefore he has no means of ascertaining whether Mr. Commissionman cleaned up not only the \$30, but his commission of 10 per cent, or \$15 more. In other words, our city man may quote the market just high enough to get a consignment, but may sell above his quoted market. The effect of this low quotation is to depress the honey market generally, and Mr. Commissionman makes on the sale his legitimate commission plus \$30.00 that is not his. But suppose he wants to make an outright purchase of some lots that are offered. Obviously it will be to his advantage to have the market quoted low, so that on cash deals he will not have to pay the higher price, and on commission deals he can make a "scoop" in addition to his regular commission. In a word, as I tried to point out in our last issue, the whole scheme of quoting prices in GLEANINGS on honey may have a tendency to "bear" the market rather than to "bulb" it, or push it up to the level it would naturally seek. Far be it from us to cast discredit on the men who furnish us honey quotations, for as a whole we believe they are honorable men. If we did not believe them to be such we would drop their quotations. The trouble is not with the *men* but with the *system* of quotations.—ED.]



THE reader's attention is drawn to the scheme of honey quotations discussed by Dr. Miller and the editor in the columns above.

THE manuscript for the department of Fancies and Fallacies arrived too late to go in its regular place. It will be found, however, in the latter part of the journal.

ONE of the brightest and happiest articles relating to our industry we have seen for some time appears in the March number of the *Illustrated Northwest Farm and Home*, published at North Yakima, Washington. The article is entitled "The Honey-eaters' League," and is couched in a happy vein which is certain to be well received, and ought to do the bee-keepers of the Northwest considerable good.

#### A NEW NATIONAL PURE-FOOD ASSOCIATION.

WE note with pleasure the organization in Chicago, on Feb. 19, of an association charged with the duty of enforcing to the utmost limit all pure-food laws and the securing of the uniformity of the same. It is said representatives were present from the National Wholesale Grocers' Association, National Wholesale Druggists' Association, National Association of Manufacturers of Soda Water, National Extract Manufacturers' Association, and other similar organizations. If this association is what it purports to be we believe it would be a good thing for the National Bee-keepers' Association to join hands with it in securing a prompt enforcement of the laws relating to pure food. Such a society could work more quickly than Uncle Sam, and it could do much to prevent graft, etc. The General Manager of the National Association, Mr. N. E. France, Platteville, Wis., would probably be glad to coöperate in future with this organization at any future meetings. We need not wait for the national government to get ready. Let us help ourselves a little.

#### THE ENEMIES OF THE NATIONAL PURE-FOOD LAW, AND WHAT THEY ARE ATTEMPTING TO DO.

No law enacted by Congress in many years has created so much criticism and excitement as the new pure-food law. In many business circles it forms the sole topic of conversation. From Feb. 11 to 16 the city of Buffalo, N. Y., resounded with the story of the pure-food law because a convention representing the National Canners' Association, the National Wholesale Grocers, the New York Wholesale Grocers, the Western Canned Goods Association, the National Canned Goods and Dried Fruit Brokers' Association, and other societies met to discuss ways and means of coöoperating with Uncle Sam in the proper enforcement of the law, and two of the principal speakers were Professor Wiley and Dr. William Frear, who are the men chiefly responsible for the correct operation of the law.

Other meetings of a like nature have been held elsewhere, and the whole business world is agog. Several State governments are engaged in the work of framing pure-food laws almost identical with the national. We would not allude to the subject so often were it not for the tremendous importance of this matter to all honey-producers. No business was ever more cruelly undermined by adulteration than that of honey-production in the

last twenty years, and the bee-keepers of this country stand a chance to gain all they have lost, and more too, by the passage of pure-food laws in all the States of the Union.

But our old enemies are very active. Senator Proctor, of Vermont, a friend to pure food, alluded in the Senate the other day to a very powerful lobby which is being maintained in Washington to throw obstacles in the way of food reform, one result of which is the Tawney amendment mentioned in our last issue.

President Roosevelt himself is preparing a message to the people on the "States' rights" aspect of the question, as that is the way our enemies are working. They are seeking to create the idea that the national law interferes in matters left solely to each State to legislate upon.

**GLEANINGS** has always taken an advanced position on this subject, and we feel it our duty to keep our readers informed of the trend of events. It is absolutely useless to talk of better prices for honey until the adulteration evil has been scotched.

#### THE DEATH OF A LARGE BUYER AND CONSUMER OF BEESWAX.

The name of Anton F. Baumer, who died at Syracuse, New York, January 26, was not generally known to bee-keepers, though the company of which he was the leading spirit and vice-president is one of the largest buyers of beeswax in the world. We refer to the Will-Baumer Candle Company, of Syracuse, who manufacture vast numbers of beeswax candles for use in churches of the Catholic and Greek faiths. The company also prepare wax for other uses.

Mr. Baumer was not an old man, having been born in 1862, but he led a strenuous life as vice-president of a concern doing a large business in this and other countries. In the course of his career he traveled a great deal in the interests of his company, both here and in Europe, and, being socially inclined, he had many friends and acquaintances. He was a native of Syracuse, his father having founded the great candle-factory before he was born. When the Will and the Baumer interests were consolidated he virtually became the predominant head of the concern, with the position of vice-president of the company, so that Syracuse loses by his early demise one of its brightest and most popular business men, for apparently every one there knew him or knew of him as one of the city's foremost citizens.

It does not seem possible to a bee-keeper who produces a few pounds of beeswax each season that a large business could be built up in wax candles alone; but this goes to show the value of probity and honor in conducting a business, for Mr. Baumer was always known for straight and above-board business methods. He did not endeavor to piece out the beeswax with paraffine; on the contrary, the candles of his making were certain to be made of beeswax and nothing else. The result was, the church authorities everywhere could implicitly rely on his goods being pure.

We presume the company will continue to do business as heretofore.

Mr. Baumer left a wife and five children. Pneumonia was the cause of his death.

#### ELECTRIC FANS FOR VENTILATING BEE-CELLARS; OTHER MEANS FOR COOLING OFF AND FRESHENING UP CELLARS THAT ARE TOO WARM.

We have before referred to the fact that, when our machine-shop cellar becomes too warm, we turn on an electric fan to change the air; and, presto! how quickly the temperature drops and the atmosphere sweetens up!

Early in the season we reported that our machine-shop-cellar bees were not doing well. At first we were inclined to believe that the trouble was owing to the fact that they had been shut in, *a la Hershiser*. But we have since learned that this was not the cause of the trouble. A large number of colonies were put into the inner inclosure, but without the usual ventilation we had given in former seasons. The bees became very uneasy, and bumped against the wire cloth of the special bottom-boards in their vain endeavor to escape. In the course of a month some colonies gave the unmistakable odor of dysentery. Conditions seemed to presage disaster for all the cellar-wintered bees, unless something were done, and that right speedily. This was the first of January, and there were at least three months ahead of us.

The first warm day that came we took the bees out and gave them a flight. Then we put them back just as they were, but this time we set half the bees in another compartment of the cellar, the other portion going into the regular inner bee-room. We then connected a six-inch galvanized iron pipe from the window to this inner compartment in such a way that the air from outdoors would be sucked in. The outer room was larger and more ventilated. The bees in both compartments were confined on the wire-cloth-inclosed bottom-boards, as we have frequently explained. An inspection of the cellar on this 5th day of March showed they were in good condition — no signs of dysentery, and on opening up some of the hives they seemed to be snappy and bright.

About three weeks ago we noticed that the air in the inner cellar would become a little bad again. The temperature would rise to 60 degrees, and the bees become uneasy. We put a little electric desk-fan directly in front of the opening to the galvanized pipe, by which the air was brought into the room, and set it a whirling, and it has been whirling night and day for a couple of weeks back. The bees quieted down, and the conditions now seem to be perfectly ideal. The air is fresh, and the temperature has dropped to 45.

"But," the reader may retort, "what good is an electric fan to me if I have no electric current in the house?" Ay, there's the rub. Such a fan is not available to the average bee-keeper. Then why do we refer to it here? Simply because it shows the value of a rapid

change of air and the means for reducing the temperature in cellars where the temperature runs too high. In most cellars a ventilator can be provided by making a sort of blind to shut out daylight, and yet admit air. In order to make this effective there should be an opening in a live chimney to which a stove or furnace connects so there may be an active current. But this ventilation will not be required where the temperature can be held down to 45—not lower than 40, certainly, nor higher than 47. Where the right temperature can be maintained, not so much change of air will be required.

Some cases of uneasiness on the part of the bees can be allayed by sprinkling the clusters with water every now and then. If the cellar be very dry this should be done any way.

#### THE CONNECTICUT FOUL-BROOD BILL; GIVING ADVANCE NOTICE OF INSPECTION.

THE Connecticut bee-keepers have agreed upon a foul-brood bill which they are unitedly presenting to their State legislature. This is good; for it is better to present a united front and get something than to disagree and present two bills and get neither, but, unfortunately, as it seems to us, on the compromise there is one section that provides that the inspector shall give the owner notice in advance of the intended inspection. If by mail, said notice must not be less than 48 hours previous to the inspection. This, it seems to us, will defeat to a very great extent the effectiveness of the law in the case of certain parties who might be inclined to conceal the presence of the disease in order to obtain a clean bill of health on the yard. Suppose, for example, that a bank inspector were to give the officers of a bank that he was about to inspect 48 hours' notice in advance of his arrival. Could not that bank, if it were doing an irregular or crooked business, "fix" things up so that every thing would pass muster, then, after he was away, continue its illegal banking? Suppose a fire-insurance inspector were to give 48 hours' notice to policy-holders that on a certain day he would make an inspection. Could not these people sweep up their premises, get rid of all inflammable rubbish, and otherwise make their premises presentable, then afterward let rubbish accumulate, defeating the very object of the inspection?

Of course, in the case of the foul-brood situation in Connecticut, the presumption is that the *great majority* of bee-keepers would be honest and would welcome the visit of the inspector, who would be able not only to tell them if they had the disease, but how to cure it. But the chap who continually harbored foul brood in his yard (and there are plenty of them in the country who work on the theory that they can always hold it under control) could very easily remove the affected colonies and then tell the inspector to go through the yard. It is these fellows who could keep the disease alive in their yard year after year. The disease so "protected" by a provision of the kind under

consideration would be a constant menace to neighboring yards.

The other provisions of the proposed foul-brood law seem to be excellent.

#### THE INDIANA FOUL-BROOD BILL.

The following is a copy of the proposed foul-brood bill before the General Assembly of Indiana. It appears to be based on the Wisconsin and Ohio laws. As a whole, the general provisions are good. We have only one suggestion to offer; and that is, that the State inspector be allowed to appoint deputies under the general direction of the State Bee-keepers' Association. This is a weak point in some laws already in force, because it very often happens that one inspector can not begin to cover all the territory and do it well.

The scheme of raising the fund to defray the expense of the law is the same as in the Ohio law, and is a good one.

The officers of the Indiana State Bee-keepers' Association urge all the bee-keepers of that State to send in their dollar and become members of that Association. This dollar will also make them members of the National. In view of the pending legislation in the interests of bee-keepers, our Indiana subscribers should rally to the support *at once*. Send the money to Jay Smith, Secretary, Vincennes, Ind., box 74.

Be it enacted by the General Assembly of the State of Indiana.

SECTION 1.—Upon the recommendation of the officers of the Indiana State Bee-keepers' Association, the Governor may appoint for a term of two years a State Inspector of Apiaries. Such inspector shall, when notified of the existence of a disease known as foul brood among apiaries, examine all such as are reported and all others in the same locality, and ascertain whether or not such disease exists, and, if satisfied of its existence, shall give the owner or person who has care of such apiaries full instructions as to the manner of treating them.

SECTION 2.—Within a reasonable time after making such examination the inspector shall make another examination thereof; and if the condition of any of them is such as, in his judgment, renders it necessary, he may burn all the colonies of bees and all the combs necessary to prevent the spread of the disease.

SECTION 3.—Any owner of a diseased apiary, of honey made or taken from such an apiary, who shall sell, barter, or give away such apiary, honey, or appliances, or bees from such an apiary, expose other bees to danger of contracting such disease, or refuse to allow the inspector of apiaries to inspect such apiary, honey, or appliances, shall be fined not less than fifty dollars nor more than one hundred dollars, or be imprisoned in the county jail not less than one month, nor more than two months.

SECTION 4.—There shall be levied annually on the owner of each colony of bees in the State of Indiana one cent for each colony owned, which levy shall be placed on the tax duplicate of the respective counties by the county auditors at the time of the levy of other taxes each year. The amount so collected shall constitute a special State fund, to be disposed of in the payment of the salary and actual expenses of the inspector.

SECTION 5.—The inspector shall make, at the close of each calendar year, a report to the Governor, stating the number of apiaries visited, the number of those diseased and treated, the number of colonies of bees destroyed, and of the expense incurred in the employment of his duties. Said inspector shall receive three dollars for each day actually and necessarily spent in the employ of his duties, and be reimbursed for money expended by him in defraying expenses: Provided that the total expenditures for such purpose shall not exceed the amount secured by the special assessment as defined in section four.



Salt, applied wet, says Mrs. J. E. Chambers, of Vigo, Texas, beats all my "cures" for bee-stings mentioned on page 88.

Say, Mr. Editor, how are *your* chickens? Contrary to the arguments against keeping poultry with bee keeping, the writer now has a pen of nice Plymouth Rocks. If I can overcome the trouble of so many bee-keepers who handle poultry as too many poultry-men handle bees, I may be at least as successful in the poultry-business as I have been with my bees. [Wait till A. I. R. gets home.—ED.]

#### MOVING BEES TO NEW LOCATIONS.

Experience in moving bees at all kinds of times has taught me that bees moved to a new locality, just a short time before the honey-flow, will give better results than if previously moved. The excitement stirs them up to activity and gives the bees a vim and vigor that come just at the right time for them to take full advantage of the flow. It seems to awaken them in such a way as will cause them to rush out in full force and a determination to gather all in sight, while colonies already in the place are slower to begin operations. This is an important matter when locating new outyards or changing locations. The bees are left on the old location, and stimulated to build up as much as possible when they are moved to the new location in time for the flow. I am doing this again this year.

#### AUTOMOBILES FOR BEE-KEEPERS.

"Hauling bees to outyards, without horses," is mentioned on page 1109, 1906, and two illustrations to show how an auto is used for carrying a load of "bee nuclei." The advantage of such a horseless vehicle is that it is sting-proof, and there's no trouble with the bees. Another bee-keeper's "automobile" of California is shown as a frontispiece of the Nov. 15th issue, 1906—another horseless carriage in the shape of a mule. The editor, page 1418, thinks it is probably sting-proof. While there are automobiles in Ohio and California, we Texans have them also, and a picture of one of these horseless carriages is shown on page 406.

But all jokes aside, a "rig" of this kind is not a bad one for moving bees, especially over bad roads or where the sand is deep. There are a good many advantages in moving bees on such a heavy wagon, which rolls over the ground much more smoothly, and with fewer jolts, than a lighter one. While small

stones and sticks jolt a light wagon, this heavy kind acts more like a steam street-roller, simply rolling the obstacles into the soil. Another advantage is the slow steady gait of the team, besides being sting-proof to a greater extent than horse teams. A larger number of colonies, too, can be loaded on such a wagon, and, although the move is slow, it is more apt to be sure. It beats *real* autos on the kind of roads over which I have moved bees, loading from 30 to 40 heavy colonies on at one load.

#### SCATTER YOUR APIARIES.

The advantage of having bees scattered in different yards has been more apparent this past season, and shows up again in our spring examinations. Three of my apiaries along the mountain-ranges did nothing, while heretofore a good crop was obtained year after year. Three yards in mesquite range secured a good crop, while two other yards on cotton plantations turned out better than any of them. Only locations of the former kind would have left my crop report blank. It might be suggested that the three first-mentioned yards be moved to better localities; but this would be impracticable, as results another season might be just the reverse as regards yields of the respective locations, or, in other words, if all the apiaries were located where the best results were obtained last year a failure of a honey crop might be experienced, while on the old locations much honey might have been secured. This has taught me to scatter my apiaries, and in different kinds of locations. In some portions of our country, localities differ very much, even when only a few miles apart, as regards the honey flora.

#### CHEAP PAINTS FOR HIVES.

Some bee-keepers do not paint their hives, because "paint costs." If they could get a cheap paint for bee-hives they would paint them. It must be admitted that a well-painted hive, one kept painted, will outlast an unpainted one, if made of the same material. It holds good with dwelling-houses, and so it will with bee-hives, notwithstanding the arguments put up in favor of unpainted hives; and the better painted the hives are, the more lasting; hence the best paint should be used for the purpose—a strictly pure lead and zinc, and pure linseed oil, outside white, should be used. Several years ago some of the much advertised cold-water paints, such as "powderpaint" and "asbestine," a white fire-proof weather-proof paint, were given a trial. The work seemed satisfactory until exposed to rain, which penetrates and soaks into the wood just as badly as when no paint is used. While it is fairly satisfactory for hive sides and ends, it is almost worthless for covers. However, such paints are better than no paint at all when hives are not shaded. All things considered, however, "the best paint is the cheapest in the end." This can, perhaps, be better shown by the following illustration which I take from a coloring

card of the paints we have found the most satisfactory and lasting in our experience as "painters," which, by the way, I have been following as a side issue. Suppose your paint-dealer offers you two brands of paint—one being a strictly pure prepared paint at \$1.75 per gallon, and some other at \$1.35. Now, the first will go much further, and cover from 25 to 30 per cent more surface per gallon than the cheaper brand containing barytes and whiting (both objectionable in good paints), but much used in place of white lead and zinc. Even should you ignore the cheap quality of the lower-priced paint, the better article will actually cost less, because it takes fewer gallons to do the work. For example, 2000 square feet require two coats of paint. Of the \$1.35 article, ten gallons are required, amounting to \$13.50. Of the other it takes only seven gallons at \$1.75, which amounts to \$12.25, leaving a saving of \$1.25; besides, what is more important still, you have the very best paint for your hives. It should be remembered that the labor is the same for either a cheap or a high-price paint to be applied, except that hives painted with the cheaper article must be repainted much sooner, hence the expense is increased in this respect also. It is not an agreeable job to have to paint hives very often, especially when they are once tenanted, hence it is best to paint them right, which is the purpose of this article.

THOSE CANDY-FEEDING EXPERIMENTS.

Dr. Lyon's article and the editor's footnote, page 95, together with the editorial on page 83, mixed me up quite a little. Further discussions on the subject would be timely. I am not certain which one of the three kinds of candy should be used for best results in winter feeding, and it might save others much loss from feeding the wrong kind of candy. "Good" candy gave best results with Dr. Lyon; "hard" candy, made of sugar and water, boiled, gave good results, while that made by boiling honey and sugar melted in the hives and killed the bees. He fed outdoors.

At Medina, the "Good" candy gave trouble, melting in the hives and killing the bees, while the best results were obtained from "hard" candy made from sugar and water. The feeding was done indoors. The results were just the reverse in the two cases, if I understand the articles correctly. The question now is, "What caused such different results?" The editor attributes it to the difference between indoor and outdoor feeding. There's something in this. "Good" candy over a colony out of doors is not subjected to as high a temperature as in the cellar. Although the heat of the cluster may be the same in both cases, the temperature around the candy in an outdoor super would most likely be hardly as warm as the other. In addition to this the moisture of a cellar would play a great part toward the melting of "Good" candy, as it keeps best in a cool dry place. But why the same results with

the hard candy made of honey and sugar fed outdoors by Dr. Lyon, as with that fed indoors at Medina? One thing is true—if honey is boiled it will remain liquid for a time, at least, if kept warm, or even after it has become apparently hard, as in the candy it soon becomes liquid again if subjected to warm heat. In this respect it is a harder matter to keep "hard sugar and honey candy" in a warm place than "Good" candy. Judging from Dr. Lyon's experience, the heat from the cluster in an outdoor colony has the same effect upon such candy as when fed indoors, with perhaps the difference that it would melt sooner and give worse results in the cellar. I am not sure but that Dr. Lyon would have found just as good results from hard candy made of pure granulated sugar and water, which gave best results at Medina, as he did with the "Good" candy.

Unless otherwise convinced I believe the best all-around results can be obtained with the hard-boiled sugar-and-water candy. Pure granulated sugar and water are cheapest in the first place. If honey is used, either in hard or "Good" candy, it adds to its expense. Besides, unless it is known to an absolute certainty that there is no danger, diseases might be introduced by using honey in feeding. Another danger with "Good" candy is that one can not always be certain whether he is getting *pure* powdered sugar or not.

*DICKINGS FROM OUR  
Neighbors Fields*  
BY "STENOG"

It seems to be clearly proven now that the honey market in England is no great bonanza for the bee-keeper. I took pains to get from England some honey quotations from Travers & Sons, the largest wholesalers in London. They quote amber Jamaica honey at 5 cents per lb.; fine pale, 6 cents; finest cream white, 8 cents. Honey in glass jars, etc., seems to be rated more according to the package than the contents. My correspondent says the reports as to the high price of some kinds of honey in England, notably heather, are doubtless true, for some people there want that honey, no matter what the price, and actually enjoy paying a fancy figure. Heather honey is national in England, and John Bull eats it loyally in the spirit of—

Oh! wrap the flag around me, boys.

It would be interesting to know the *per capita* consumption of honey in England as compared with this country. It certainly is far greater there than here. From the very first, English literature has teemed with references to the bee and honey.

As showing how the editor of a great metropolitan daily may err in regard to common things, I clip the following from the New York *Times* for Jan. 14:

NO BEE "WITH HONEYED THIGH."

It was, of course, a *lapsus linguae* of the editor who wrote under the heading of "Bees and Blue Flowers" in to-day's issue of the *Times* when he spoke of "bees lading their hip pockets with honey."

No one doubts that the editor knows what a large majority of his readers do not know, i. e., that bees do not carry honey in their "hip pockets" or pollen-baskets. Neither is honey sucked from the flower, as is so often believed.

The process consists of the rolling about in the flower of the elongated lower lip which is covered with hairs to which the honey clings. When this lip, or palp, as it is called, is laden with honey the honey is conveyed to the mouth and swallowed. It passes to the so-called first stomach, whence it is ejected by way of the mouth again into the cell of the comb.

The supreme delight of the *Times* editors when they are corrected or criticised prompts this small correction of an almost universal fallacy. HONEY.

It is refreshing to have so quick a refutation of the error, and still more so to see the editor of so good a paper willing to print the correction. But it shows there is still a great work to do in educating the general press in regard to bees as well as honey.

DO BEES IN GATHERING NECTAR FROM THE CLOVERS IN ANY WISE INJURE THEM FOR FODDER FOR CATTLE?

I have already made some quotations from the New Zealand Bee Bulletin, by Isaac Hopkins, written to meet the objections of farmers whose fields are visited by a neighbor's bees, on the ground that the bees take from growing crops what is useful to the farmer. In the following extract Mr. Hopkins shows that the superfluous nectar is evaporated and lost to the farmer at all events unless the bees take it. He says:

That the nutritive quality of the plants in any growing crop is not diminished by the abstraction of honey from their blossoms would appear to be evident from the fact that those plants have actually thrown off the honey from the *superfluity* of their saccharine juices, as a matter which they could no longer assimilate. There would appear, on the other hand, to be good reason to believe that the plants themselves become daily *more* nutritive during the period of their giving off honey—that is, from the time of flowering to that of ripening their seeds.

In England the gardener of the Duke of Bedford made experiments on the grasses and clovers growing on about 100 different patches, but all as nearly alike as possible, especially at the time of flowering and at that of ripened seeds. These plants were acted on by hot water till all soluble parts were dissolved, and the solution dried in an oven, and weighed. This product was sent for analysis. The chemist, Sir H. Davy, says:

In comparing the compositions of the soluble products afforded by different crops from the same grass, I found, in all the trials I made, the largest quantity of truly nutritive matter in the crop cut when the seed was ripe, and the least bitter extract and saline matter, and the most saccharine matter, in proportion to the other ingredients, in the crop cut at the time of flowering.

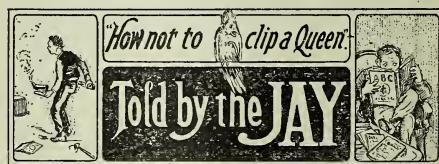
Mr. Hopkins adds:

In the instance which he then gives, as an example, the crop cut when the seed had ripened showed 9 per cent *less* of sugar, but 18 per cent more of mucilage and what he terms "truly nutritive matter" than the

crop cut at the time of flowering. From this it would follow that, during the time a plant is in blossom, and throwing off a superfluity of saccharine matter in the shape of honey, the assimilation of true nutritive matter in the plant itself is progressing most favorably. In any case it is clear that the honey, being once exuded, may be taken away by bees or any other insects (as it is evidently intended to be taken) without any injury to the plant, by which it certainly can not be again taken up, but must be evaporated if left exposed to the sun's heat.

It would be a good plan to submit the above to the growers of alfalfa. Two important points are established here—namely, clovers and grasses have not reached their best stage at the time of blossoming; and bees do not injure the plants by carrying off the nectar, which is of no more use to a plant than sweat is to an animal.

*L'Apiculteur*, of Paris, does not like E. R. Root's footnote to Dr. Miller's Straw in GLEANINGS for Nov. 15, relative to Professor Gaston Bonnier's discovery of the prospector bees that look up work for the others to do. We might term them "foremen" bees. Our French friends call them *chercheuses*—that is, seekers. We in this country have been long familiar with the scout-bees and their ways. It is not them we dispute, but the assertion that they plan the work for the other bees to perform. We are aware of the splendid abilities of Professor Bonnier in the field of apiculture, and appreciate highly any thing he has to say relative to that science; but we should be glad to have more proof for the above assertion.



AN AMUSING AND YET NOT UNCOMMON EXPERIENCE OF BEGINNERS.

The first colony of bees I got was in a ten-frame home-made hive. I kept them standing in the back yard the first year, not daring to go near them. In the fall I went out one night and peeped under the cover, and was surprised to see that they had no honey. I supposed all a fellow had to do to get honey was to get some bees and they would do the rest. Nothing succeeds like success, so they say. Not so here. Nothing makes me succeed like a failure, so I determined that next year those bees should make some honey or furnish a reasonable excuse. I subscribed for GLEANINGS and got the A B C. Then the bee fever took hold in earnest. I studied the book night and day. I knew it all by heart. I got the "Facts About Bees," and learned it till I could recite it as easily as a minister can quote scripture. The argument in it was good. Every thing in it was all worked out. How grateful I felt that every thing had been learned for me,

and all I had to do was to reap the benefits! I tried hard to be unassuming, but inwardly I could not help feeling proud that I knew every thing about bees.

I did all this studying in the winter; and how I longed for spring to come that I might demonstrate what I already knew! How that winter persisted in staying with us, and how reluctantly did spring show her shining face! But at last, in the latter part of March, there came a beautiful bright warm day—just the time for clipping the queen! I had never seen a queen, and my anxiety to view her majesty was something fierce. I had an assistant cover me with mosquito-bar. I put on mittens and wrapped my wrists with rags. Then I fired up the smoker and prepared to go into action. How I dreaded opening that hive! I felt a little pale, but my teeth were set and it was do or die. I was too big a coward to retreat while everyone was watching. I must have been an awe-inspiring sight to those bees as I swooped down upon them, dressed in armor, with the smoker spitting smoke and fire. I soon enveloped the hive in smoke, gave it a few jolts and tore off the cover, then smoked again. Of course, the bees cowed before such a vicious onslaught. Now, the books said: "Catch the queen and clip her." Clipping was the primary object of the expedition, but I saw where the books were right in saying "catch the queen" before saying "and clip her." The only change in the wording of that I would make would be to precede that with "find the queen." I took out the frames carefully, and stood them around the hive in various places, but could not "catch the queen." I looked and looked. There were more bees in that hive than I had expected to see in ten hives. The separation of a mixture of the proverbial hay-stack and needle would have been a cinch compared with the task in hand. I hunted all the afternoon, and had to give it up on account of darkness. I was disgusted but not discouraged. This problem confronted me: "If I fail to find one queen in half a day, how long will it take to find several thousand queens?" (the number I expected to have in a year or two).

Nothing succeeds like a failure, and the next day I went after them with more zeal than ever. On lifting out the third frame my eyes rested on a bee the like of which I had never seen before. It was a long bee, and she walked with a more majestic tread over the comb, and did not seem to be in such a rush as the rest of the bees. She was of a dark brown color, and how handsome she looked! Verily this *must* be the queen! The queen of Sheba might have looked good to Solomon, but she was not arrayed like this one. The next thing, "catch the queen." I tried to make the catch, but she was not so easy. Just as I would close my fingers on her she was not there. At last I got hold of one wing, but she buzzed around so that I let her drop. Again I got her by the wings and tried to transfer her to the left hand, but her head did not stick out far enough for me to get a good hold, and she backed out and

got away. Next time I shut down so hard that I was afraid I would kill her, and then let up so that she got away again. This time she dropped in the grass and I had a time to find her. The fourth time I held her between my left thumb and finger in a trembly fashion, much as a dog bites a rat, and probably the sensations to the rat and queen were similar. I then got the shears. I forget whether they were a large pair of tailor's shears or the kind they use for shearing sheep. In my enthusiasm I had used them to pry frames apart with, and they were more or less gummed up with propolis. I slid them under the wings and shut down. The wings bent over, but would not cut. I tried again and again, until I either wore the wings in



NOW THE BOOKS SAID: "CATCH THE QUEEN AND CLIP HER."

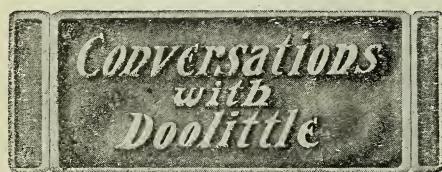
two or pulled them off. But I got them off, and a leg with them. Is it any wonder that those bees decided they needed a new queen—one more in keeping with the modern ideas of rapid transit? A little later I thought I would "shook" them into a new Danzenbaker hive, and I was astonished to find that they had a new yellow queen with wings of the regulation length and a full quota of legs.

P. S. In my first article I forgot to tell where I was educated. Was educated at the State Agricultural College of Indiana. Graduated with horrors at the foot of the class and received the degree of R. F. D.

[Many a beginner has a similar experience. When he pays anywhere from one to three dollars for a nice queen, and then essays to clip to keep his three dollars from flying

away, his fingers begin to feel trembly, and he wishes Mr. Queenbreeder had clipped her before sending.

A little advice to such beginners right here may prove to be helpful. First practice on clipping drones. Learn to pick him up by the wings until you can do the little act deftly and neatly, without pinching or hurting him. When this is accomplished, grab his waist between the thumb and fore finger of the other hand. In that position he can be held without injury and his wings be clipped. Now try her majesty the queen. The job will then be easy. When grasping her by the waist or thorax do not be afraid of hurting her, for a very slight pressure will do no harm, as the hard bony substance that goes to make up her corset waist, we will say, will protect her from any injury. After clipping, open the fingers on top of the frames, allowing the queen to crawl off quietly by herself. There are a good many other ways of doing the work; but this for the beginner is about as simple as any unless one uses the little Monette queen-catcher and clipper sold by G. W. York & Co., of Chicago.—ED.]



#### GETTING THE BEES READY FOR THE SURPLUS.

"Mr. Jones, how did you succeed in preparing your supers and hives for the surplus season of 1907 which we talked about when you were here last?"

"First rate, Mr. Doolittle. I have all the supers cleaned, fixed, and made, that I think I shall need this season, and the sections well under way for filling them."

"That is good. The winter and early spring is the time to get all our hives and supers ready for the summer's operations, and I am glad you are beginning right."

"I was thinking this morning that all this surplus of hives, supers, and sections would be of little use to me unless I knew something about getting the bees ready to take the best advantage in them, and so I thought I would come over and see you about this still more important matter of getting the bees ready, so I could be meditating on it and thus be ready to act when the time comes to put it in practice."

"Good idea. In fact, our time for study and preparation all along the line of bee work is during the winter months; and he who takes time by the forelock is the one the most likely to succeed."

"Very good. What is the first work along this line?"

"My first work is to see that each colony

has stores enough to carry them to where the hives can be successfully opened and the combs manipulated, and to know about the strength of the same as to number of bees."

"How do you find this out in early spring?"

"This is easily done on some cool to cold morning where chaff-packed hives are used, by taking off the cover and turning up one corner or one side of the covering, cloth, or quilt that lies over the frames to keep the chaff from falling down among the bees. Turn it back till you can see the edge of the cluster of bees; and as you do so, look along the combs for sealed honey, and if such is seen in four or five of the combs you can safely calculate that such a colony will be all right till pollen becomes plentiful, at which time you can open the hive and make a thorough examination."

"But suppose I do not find much or any sealed honey, what then?"

"You are to mark that hive and feed the bees in some way, the very best of which is to set in frames of sealed honey. If you do not have such, take out a comb and put in a division-board feeder next to the cluster of bees, when you feed them by pouring feed a little more than blood-warm in the feeder, the smell and warmth of the feed arousing them sufficiently so they will take the feed. But remember that a comb of sealed honey set right in there where I tell you to set the feeder is the best possible way to feed bees at any time of the year where bees need feeding."

"Well, as I have quite a few such combs which I saved for future use last summer, I shall be all right here. But how about ascertaining the strength of the colony as to bees?"

"After having found out about the amount of honey, just turn up the covering till you come to the first edge of the cluster of bees on one side, then turn up the cover on the opposite side till you come to that side of the cluster, then count the number of spaces between the combs they occupy, and you have the thing at your command at once."

"How is that?"

"Suppose you find bees in from seven to ten spaces, you can know that such colonies are extra good ones; and if they have honey enough they will need no further attention except to know that they have a good queen later on. If you find bees in five and six spaces, such colonies are good ones, and will bring up to strong colonies in time for the honey harvest from clover; but if you find bees in only two, three, or four spaces, you may know that there is little chance for the two-space cluster to live to see the flowers blossom, and the show is poor for the three-space cluster; but the four-space cluster will be apt to get ready for the basswood-honey harvest without much trouble."

"But a part of my hives are not chaff-packed. How can I tell about these?"

"This is done by lifting them up from the bottom-board and looking between the bottom-bars of the brood-frames. If the hive is

heavy, and you find bees covering four to seven frames, you can count such hives as all right till you can open the hives with safety for a careful examination of the combs as to both brood and honey."

"Why need I wait about this opening of the hive? It would seem better to know the exact condition of things at once."

"It is better that no sealed covers should be moved nor frames disturbed thus early in the season, for it often does more harm than good through the chilling of brood, and leaving the hive in poor condition to keep in the heat arising from the cluster of bees. We must be careful here, if we would reap the best results."

"But if I consider such hives short of stores I must open the hives in order to feed them, must I not?"

"No, not necessarily."

"How is it to be done, then?"

"Just set an empty super on the bottom-board, and in this super set a pan or square tin, dripping-pan, or some like kind of dish, then pour in your syrup or feed, the same being about as hot as you can well hold your finger in. Put on top of the feed a wooden float made of a piece of  $\frac{1}{4}$ -inch board about  $\frac{1}{2}$  inch smaller all around than the bottom of the dish containing the feed, and over the whole spread a piece of an old towel or a piece of cheese-cloth, seeing that the latter lies down so it touches the feed all around. This is to keep the bees from getting daubed or drowning. Now set the hive of bees over the super, and the warmth and scent from the feed will cause the bees to come down in masses till they cluster below the frames and touch the cheese-cloth, thus forming a line of bees from the brood above to the feed below, which, through the warmth of the feed, will enable them to carry up from two to four quarts in a night, according to the strength of the colony."

"I see. I had not thought it necessary to have the feed warm, but I now see there is an advantage in it. But can I feed at any time in this way?"

"At any time when the bees are not flying. To feed in this way during a warm day would almost surely result in robbing, and should be done in the twilight of the evening, or on cool or rainy days, and never when the bees from other colonies are likely to be attracted to such colonies as are being fed."

"What am I to do with such colonies as have only one or two frames enclosed by the cluster?"

"That is a matter over which some of our best bee-keepers disagree; but the most of them now think that it is best to do nothing with them, only that they be not robbed, through which the whole apiary is often demoralized. As a rule, if left alone the fittest will survive, and all which do not are to have their hives cared for so that the honey in them is not carried off by other bees."

"Why could not several of these small colonies be put together, thus making one strong one of the several?"

"That looks reasonable to the one who has

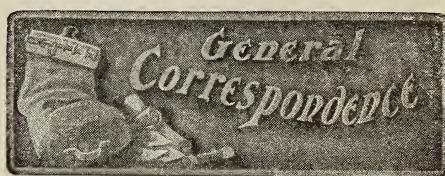
never tried the matter; but to those who have tried it, the knowledge has come through the facts in the case, that, nine times out of ten, such united colonies will be no better at the end of three weeks than would be any that survived of those left untouched."

"That is strange."

"So it is, and it has puzzled many of our best bee-keepers during the past. About the only way of helping these weak colonies seems to be the giving to them a frame of brood where lots of young bees are just emerging, taking their combs all away but two of honey, and putting the frame of emerging brood between these combs of honey, and confining the whole to these three combs by means of a dummy and warm blankets around the whole, thus keeping them warm till the young bees are able to care for more room."

"Why would that not be a better plan than either uniting or letting them take their chances?"

"At first glance it would; but after repeated trials it is generally found that, with the exception of saving some extra good queen, or for some special reason for wanting to save just that one colony, the taking of that frame of brood away from the stronger colony thus early in the season does more damage to the strong one than is gained by saving the weak one; and, besides, it often happens that the bees that were in the weak colony die before the young bees from the brood become old, and strong enough to care for things, and so we not only lose our weak colony but this frame of brood from the stronger, making a loss of the whole thing, and having only our labor for our pains."



#### BUCKWHEAT AS A HONEY-PRODUCER.

The Conditions that Control the Flow of Nectar; the Season more Important than the Amount of Bloom; Overstocking; Preparing for Winter in July.

BY E. W. ALEXANDER.

In the June 1st issue of GLEANINGS I noticed the following questions: "How many colonies will 60 acres of buckwheat support, or how much honey can be gathered from it?" As the editor calls my especial attention to this question I will give some of my experience in keeping bees in buckwheat locations. I first wish to say that this question never can be answered exactly; the principal reason is that, during the time that buck-

wheat is in bloom, many other honey-producing flowers are also secreting nectar, principally goldenrod, which yields a dark honey resembling buckwheat very much, and with us is a better honey-producer than buckwheat. However, I will try to throw a ray of light on this subject.

Several years ago I kept nearly 200 colonies in a location where there was barely 100 acres of buckwheat within reach of my bees—that is, within four miles, or in a circle eight miles in diameter. Still, with this small acreage per colony it was no uncommon thing to harvest a surplus of 15 to 20 lbs. of nice buckwheat section honey per colony. This caused me to feel very anxious to keep bees in a buckwheat location where thousands of acres was raised annually, so I moved to this place. But I soon found out, to my sorrow, that the amount of bloom had but little bearing on the amount of surplus I obtained, and in this respect buckwheat is no exception to other flowers, aside from the fact that it does its best when we have quite cool nights followed by a clear sky and a bright hot sun with little or no wind; then from about 9 o'clock in the morning until 2 in the afternoon it secretes nectar very fast. We seldom find a bee at work on it much earlier or later in the day. But on goldenrod they will work from seven in the morning until after 5 in the afternoon. It also requires quite cool nights and a very bright sun during the day. Neither it nor buckwheat amounts to much in cloudy weather, even if the day is warm. With a temperature below 70° on a cloudy day, bees will waste away fast on either goldenrod or buckwheat. They simply crawl around, unable to fly; and unless they get a bright sun the next day they soon die.

This question has a close bearing on the subject of overstocking, and it is hard to answer it without touching somewhat on that question. From the reports given in our bee journals the past season, during the commencement of the clover bloom in several of our Western States, I noticed that it was all that could be desired; but as to the yield of honey, it has been in many places almost a failure, and we have received many letters of inquiry for clover extracted honey from some of the best clover sections of the United States. The writers of these inquiries state that, although they had a very large bloom, their bees got but little surplus.

My friends, the time will come when many of you will realize that what is commonly called the "season," which is, the condition of the ground as to proper moisture and the temperature, and the electrical condition of the atmosphere at the time the flowers are in bloom, will have a thousand times more bearing on our surplus than the *amount* of bloom or the number of colonies we may have in one apiary.

A few years ago, during the commencement of our August harvest, when our bees had at least 1500 acres of buckwheat bloom to work on, and were getting honey very fast, a heavy thunder-shower came down

from the north about 2 P.M., which caused the mercury to drop 21 degrees in less than half an hour. Then this low temperature of about 65 degrees, with windy cloudy weather, lasted some 11 days, during which time the bees destroyed large quantities of their brood, for there was no nectar in any flowers during that time, and they were ready to rob any hive that was opened. We have but very little basswood in this locality, and two years ago the bloom was very light. We could hardly find a tree that had any flowers on, but still our bees got a fine surplus of over 9 tons of basswood honey; but the weather was all that could be desired. It was clear, hot, and very damp; the moisture of the air condensed on every thing that was cool, and consequently we got the honey.

One year ago we had the most profuse basswood bloom I ever saw. Nearly every tree was full of flowers; but the weather was cold, cloudy, and windy during nearly the whole time it was in blossom, and we did not get enough basswood honey so it could be smelled or tasted in our surplus. I don't know that I ever saw the buckwheat harvest stop so suddenly, with apparently little cause, as it did last August. From the morning of the 21st to the night of the 24th, bees got honey very fast. Our hive on the scales averaged a gain of about 8 lbs. a day, and we extracted a tankful of a little more than 2 tons each day for four consecutive days, and our men all agreed that there was more honey in the apiary each night than there was in the morning. But on the night of the 24th we had had a light shower with a fall of temperature of 11 degrees. The bees were very quiet the next morning until about noon; then when it warmed up a little they were ready to rob any thing they could get at, and there were thousands trying to get into our honey-house around the screened windows; and we knew from past experience that the honey season of 1906 was then drawn to a close. The hive on the scales did not gain  $\frac{1}{2}$  lb. any day after that fall in temperature and shower, although there was considerable buckwheat in bloom.

Then at other times I have noticed, when the weather remains warm without any rain, the flow of nectar would last until Sept. 5; but if a break in the harvest comes at any time after the 24th of August we at once take off our extracting-combs, run them through the extractor, and put them away for another year.

This year we finished the last work in the apiary for the season on Sept. 1, and our honey was then all either in the barrels or tanks, and we had little more to do. We always prepare our bees for winter during July and August, so our summer's work was finished until we put them into the cellar.

I might continue to write page after page, citing cases where the weather has nearly all to do with our securing a surplus, but I don't think it necessary. The one principal requirement in securing a nice surplus is, as I have stated, the season; but this, being far beyond man's control, will always make the

production of honey a somewhat uncertain business. The bloom of 60 acres of buckwheat added to what other honey-producing plants which would blossom at the same time, would undoubtedly help 100 colonies very much to fill up their hives for winter and give some surplus. I should consider it quite a help to an otherwise fair location; but I can not see how we can ever ascertain any thing like a correct knowledge of what our harvest will be, or the number of colonies that will overstock a location. My advice is, don't make any debts expecting to pay them from your future crop of clover, basswood, or buckwheat honey; for if you do there are many chances that you may be badly disappointed.

Delanson, N. Y.

[When we visited Mr. Alexander, two years ago this coming summer, he showed us how the bees were working on goldenrod as well as buckwheat. At that time he stated that the bees were getting as much (if not more) from the goldenrod as from the buckwheat. While his locality has generally been credited with being a great buckwheat country (and this is true), yet if this were the only source it is doubtful if our correspondent would be able to maintain so many bees in only one locality. Goldenrod thrives luxuriantly there, and, moreover, the conditions seem to be just such as to make it yield a large amount of nectar. The surrounding country is very hilly and stony. Some of the side-hills, in consequence, can not very well be cultivated, and it is these that grow up wild with goldenrod.

As to the amount of acreage that it takes to support a given number of colonies, if Mr. Alexander's bees have a flight of three or four miles for pasture, the lowest calculation shows that there are 25 colonies to the square mile, taking three miles as a radius, we will say, and 700 colonies as the basis of our figures. But the average bee-range of this size would not have over 200 colonies, or seven to the square mile. If the 200 were divided up into three outyards, or even two, the available bee-range would be more evenly distributed.—ED.]

#### HOW BEE-KEEPING HAS DEVELOPED.

Some Suggestions to Those who would Make it their Only Business.

BY W. Z. HUTCHINSON.

First, a brief backward glance at the past, a glimpse of the present, then let the eye rest upon the future.

In the past, almost every farmer had a small flock of sheep, two or three cows, a dozen or two hens, raised an acre of flax, made his own cheese and clothing, and, among other things, kept a few hives of bees—brimstoning the heaviest and lightest in the fall. Had a man attempted bee-keeping as a specialty, the keeping of one hundred or

even fifty colonies, he would have been looked upon as visionary, wild, almost a lunatic; and, under the existing conditions, it would have been a foolish move. The product would have been in poor shape for transportation or retailing, the facilities for transportation most meager, and a sufficient number of consumers most difficult to find and reach.

As the years rolled by, population increased wonderfully; railroads, steamboats, and other modes of transportation multiplied; and then came the invention of the movable-comb hive, the honey-extractor, the bee-smoker, comb foundation, and the section honey-box. The product of the apiary was secured in a marketable, transportable shape; there were means of transportation, and a market. Men began keeping bees in larger numbers, making a prominent side issue of a business that eventually grew into specialty. Bee journals came upon the field of action; factories for the manufacture of bee-supplies were built, and bee-keeping as a separate rural industry became an established fact.

But there were many problems to be solved. The successful wintering of the bees, and the control of increase or swarming, were difficult of solution, and bee-keeping as understood and managed in those days was truly an uncertain pursuit—very profitable if things turned out well, but likely to leave the bee-keeper, some fine spring morning, with only empty hives and combs. It is no wonder that the advice was to combine bee-keeping with some other pursuit. Gradually the difficulties were overcome. Foul brood could be banished from an apiary or from a neighborhood; swarming could be prevented or forestalled, and the proper food, temperature, ventilation, etc., brought the bees safely through long severe winters. That bee-keeping might be depended upon as a sole business was proved by the success of such men as Crane, Hetherington, Coggshall, Ellwood, Holtermann, Miller, Townsend, Coverdale, Aikin, Gill, McIntyre, Mendleson, and many others equally successful but not so widely known.

This is an age of specialty, and bee-keeping is no exception to the rule. One farmer is a stock-grower; another raises potatoes, as did Mr. Terry; another, great fields of cabbages; another, fruits, etc., and, instead of keeping a few bees, they buy their honey of the man who makes a specialty of its production, he in turn buying his meat, milk, and potatoes. Many who are now keeping bees in connection with some other pursuit are asking themselves and others if they shall drop this other pursuit and make a sole business of bee-keeping. To such I would say that *never were the prospects brighter for making a success of bee-keeping as a sole business.*

One feature that I have not touched upon, and it is most important, is the continually increasing demand for honey. Its use for manufacturing purposes, especially by the great baking companies throughout the country, has done more to put commercial bee-keeping upon a sound basis than many of

us dream. The prices paid are not high, but the demand is large and steady, which is of vastly more importance. The handling of crops of honey is drifting away from the hands of the commission merchant into those of the cash buyer. Honey has really become a staple, in good demand, and can be readily sold for *cash* almost any day of the year, the same as butter, wheat, and potatoes.

There is really no great difficulty in wintering bees without loss. An underground or suitable cellar, where the temperature is beyond the influence of outside temperature, properly ventilated, and the bees supplied with early-gathered well-ripened natural stores, or else fed a syrup made from granulated sugar, solves the wintering problem. There are several methods, notably "shook swarming," whereby distant apiaries may be managed by occasional visits, with no loss from absconding swarms.

The first thing to be considered in embarking in bee-keeping as a sole business is the location. This is the foundation of bee-keeping as a specialty. I would never think of such a thing as making a specialty of bee-keeping in a poor location. Still further, unless the location is different from any with which I have had experience, I would not attempt specialty with bees in one location—certainly not with only one apiary. With the systems of management now in use, it is possible to care for an apiary many miles from home—so far that the journeying to and fro must be done on the cars. If possible, have each apiary where the flora and other conditions are different from those at the other yards. The chances of a total failure are thus greatly lessened; there is almost certain to be a crop at some of the locations. To illustrate, I have bees in four different kinds of locations; or, rather, there are four sources of supply available to one or more of the four yards. These sources are clover, basswood, red raspberry, and buckwheat. Last year the buckwheat furnished about one-fourth of the crop, while basswood yielded nothing. Next year the conditions may be reversed. Clover yielded the most profusely last year; next year it may be raspberry.

Having secured the desirable locations, next comes the stocking of them with the very best kind of bees. I have found nothing superior to the darker strains of Italians. Get the best of hives and implements. This is one of the advantages of specialty, that it can afford to have tools and implements which are beyond the reach of the small bee-keeper. It can have the best of hives, feeders, cellars, extractors, etc. For instance, I have sold the two-frame extractors that came with the apiaries that I bought last fall, in Northern Michigan, and shall put a four-frame automatic at each yard the coming season.

To recapitulate: Get a good location; better yet, several good locations; stock them with good bees, plenty of them, enough so that when there comes a good year the crops will be enormous; have the best of hives and

implements, and study out some system of management that is adapted to yourself and your conditions. Simple, isn't it?

One thing more, and I am done. Unless you love this work, unless you can go into it with enthusiasm, and full faith in your ability to succeed, don't attempt it.

Flint, Mich., Feb. 26.

### GOOD CANDY.

Made with a Universal Bread-mixer; How to Make it so that it Can be Used as a Winter Food Without Melting down and Killing the Bees.

BY D. E. LHOMMEDIEU.

With unusual interest I have just read the article, page 95, on making bee candy.

Last spring it became necessary to feed. I used up 3 bbls. of pulverized sugar in "Good candy." It was mixed with the universal bread-mixer, No. 8. Smaller sizes could be used if desired. They are made in Connecticut, and cost \$2.50 or \$3.00. Turn into the mixer *measured* warm extracted honey, and *measured* pulverized sugar. (By experimenting you can determine the right quantities to make a stiff dough.) If made too soft it will melt and run out of the hive entrance. Use galvanized or tin basket sprinkled with the pulverized sugar; lay in one batch made in the shape of a pancake; then add a layer of sugar, etc., till you have enough to feed the outyard.

By keeping sugar over the candy, robbers can't touch it. Go to the hive; cut off a chunk of candy, the size you wish to feed, with a knife; lay it above the cluster. It will last quite a while compared with liquid feed. The brood started in this way will surprise you. You won't need to roll up your sleeves to make bee-candy this way, and there will be no robbing if the hive is properly closed at the top.

Colo, Iowa.

[Your scheme of making bee candy we believe to be excellent. We have learned by experience that it is very important to do a thorough job of mixing the honey and the sugar, and nothing could do this better, probably, than the common bread-mixers now on the market. But in view of some serious losses some of our bee-keeping friends have sustained from attempting to use the Good candy, or, as it is sometimes called, queen-cage candy, on top of the frames for a winter food, it would behoove every one to err on the safe side by putting such candy in a shallow tin pan or tray. The wooden butter-dishes that can be had at any grocery would serve a most excellent purpose. Even if you yourself can mix the candy so it will not "run," there will be others, doubtless, who can not do it; and then, too, the conditions in your climate might be slightly different from those in another. Iowa is a much drier State than many of those east of the Mississippi, and especially those bordering

on the great lakes; hence the advisability of putting queen-cage candy in some sort of container that will prevent it from getting away and playing havoc with the bees.—ED.]

### WAX-PRODUCTION.

#### Is it a Profitable Business in the Tropics? The Wax-press vs. the Honey-extractor for Getting Honey out of Combs.

BY C. F. HOCHSTEIN.

In December 15th GLEANINGS I read with interest an article from Mr. W. K. Morrison on the production of wax in the tropics, the West Indies especially. Now, I have been experimenting on this wax-producing business for some years, right here in the West Indies, with all kinds of systems and all kinds of hives, and the results of my experiments so far have been a failure financially. My experiments so far clearly show that, in a winter location like mine in Cuba, where the surplus-honey flow is from October 1 to April 1, if honey will net the bee-keeper even no more than a cent a pound he will come out better financially than producing wax at thirty cents a pound during the same time.

I will now give the reason for this, and point out how the bees will work in following Mr. Morrison's system in this location.

Let us take a brood-chamber boiling over with bees the first of October; put on a honey-board, then a super with starters one inch wide. If the weather at this time is cool the bees will be loath to go above the honey-board, but will stick honey in every cell in the brood-chamber as fast as the bees hatch out. The result of this will be that, in a short time, the brood-chamber will be full of honey, with no bees.

On the other hand, should the weather be warm at this time the bees will commence to stick in brace-comb between the top-bars and the honey-board. When this space gets pretty well filled they will crowd up above the honey-board and build brace-comb to the bottom-bar, then combs from the bottom-bar up, and fill these same combs with honey as fast as the building of them goes on.

After they get the super about a third filled in this manner, then they will commence on the starters. These they will commence to draw out, putting honey into the cells before they are half drawn out. That is the way the bees work here in using all starters from foundation in the super. If a drawn comb, cut down so as to leave a one-inch starter in the same is used, they will work just the same, with the exception of cleaning out the honey and carrying it below. Now, any bee-keeper who has ever had a super full of frames, with combs built from the bottom-bars up, can imagine what a mess he would be in, running his supers in this manner.

I have tried to meet this objection half way by using five full combs and four frames

with starters in them, interchanged in a ten-frame super. This worked a little better, but even here the bees would fill the drawn combs nearly full of honey before starting to draw out the starters. I also reversed the conditions, putting the brood-chamber above and the super with starters below, and a honey-board between; but this would not work either, as the bees would carry the honey up and crowd out the queen from laying.

From my former experiments, the conclusion I have come to regarding the profitable production of wax over honey is that it will have to be done in a one-story hive, divided into two parts, and in a summer location—I mean where the surplus honey-flow comes in summer. If nothing happens to the contrary I shall try it this summer. I have a suitable hive planned for the purpose.

I want to learn all the short cuts possible, to save work. I don't care to work like a "house on fire."

Why doesn't Mr. Morrison tell us more about his bag act? What kind of bags does he use? How many combs does he put into a bag? Does he put the same bag into the press? How long does he let them drip? What has he under the bags to catch the drip? What kind of house does he use for the purpose? I know it is *almost* possible to build a bee-proof honey-house; but it certainly is not possible to build an ant-proof house in Cuba.

I should think it would take a regular hippodrome to put all the paraphernalia in needed to hang up 75 or 100 bags with 75 to 100 tubs under them to catch the drip; and I should judge that the wear and tear of bags, the honey they soak up, what honey sticks to the tubs and pails, what the bees and ants get, and what drops from the starter left in the frame from the time it is cut until it is put back on the hive would more than pay the wages of a couple of men to extract it and barrel it at one handling.

I can not understand, either, how Mr. Morrison can get his honey to drain out of a bag. I have had cappings and chunks of honey all mashed and cut up fine, in an uncapping-box, with a wire screen  $\frac{1}{2}$  inch mesh; have left the cappings in this box two and three weeks at a time, and the honey would not all drain out. Remember, our honey crop comes in cool weather.

Then it looks to me as though a man could uncap, extract, and cut out a given number of combs a good deal faster than he could cut them into a bag, let it drip, take it down, put it into a wax-press, press it, take it out, etc. Query: How many combs can Mr. Morrison handle per hour, from hive to barrel?

I am afraid if I had to do all this slashing, mashing, and hanging up, when I got through some one would have to put me into a wax-press and squeeze the honey out of me and my clothes. I have studied on this matter of wax-production here, in order to do away with hired help as much as possible, and because there are some good bee-locations to be had in places where it would

cost more than the honey is worth to get the honey to market.

Mangos, Cuba.

[This was referred to Mr. W. K. Morrison, who replies as follows:]

Nearly all the points raised by this correspondent have been answered already in the pages of GLEANINGS, but it will do no harm to go over the questions again. It was only in the last issue of GLEANINGS Mr. Frank Reiman, of Nueva Paz, Cuba, drew a picture of wax-production in Cuba quite the opposite of what Mr. Hochstein has given. For its size, Cuba is an enormous producer of beeswax, nearly all of which is produced in what some may term "winter," but what most Americans would be glad to call "summer."

I suspect Mr. Hochstein is a Yankee who likes to follow Yankee ways, even in the tropics. My experience has been that, if it was warm enough out of doors to secret nectar, it was warm enough inside a hive for wax-making. Mr. H. could possibly solve some of his difficulties if he used an entrance to the top story of his hives. He would solve more problems if he used shallow brood-chambers. Full sheets of foundation in all brood-frames are also essential to success.

As to bags, three are quite enough for one apiary—one in the press, one dripping, and one being filled. As to the best material, opinions differ. Some like cheese-cloth, others use burlap. In Cuba one can purchase a linen cloth used by women for fancy work, which is strong and good. If too close in a mesh, get one of the women who make drawn work to pull some of the threads. Don't apply the pressure too fast, or the bag will burst.

The honey expressed is fine, but it may be used to feed back. But don't use any thing but a very shallow brood-chamber for "feeding back," and always add water before feeding. You can do this in July and August.

If Mr. Hochstein will examine the illustration by H. H. Root, on page 103, Jan. 15, Fig. 8, he will see just how a bag is squeezed. The plan is as old as the hills. I can't say just how fast this method is, but it is certainly much faster than extracting, and much cleaner, as there is no uncapping.

As to ants, the honey can be run right into the barrels at once, and sealed up. By the way, Mr. H., you have no ants in Cuba worth talking about. You want to go to South America for ants that really know their business. —W. K. M.

#### THE ASPINWALL NON-SWARMING HIVE AS TESTED AT MEDINA.

BY E. R. ROOT.

On page 204 of GLEANINGS for 1906 I referred to a new non-swarming hive by Mr. L. A. Aspinwall, of Jackson, Mich., a hive that was exhibited at the Michigan State convention that took place in that State a year ago. It will be remembered I stated that,

notwithstanding it was claimed to be a non-swammer, and of entirely new, and, I may say, of odd construction, it attracted a good deal of attention as well as favorable comment on the part of the old conservatives present.

A little later on, in the April 1st issue, we gave a detailed description of it, together with a series of illustrations. At the Michigan convention referred to, Mr. Aspinwall promised to send me a hive to test. This I placed in the hands of our neighbor, Mr. Vernon Burt, a specialist in the production of comb honey in tall sections. I requested him to put into it a rousing big colony—one of the very best he had, and then force them in every way possible up to a high state of prosperity, so that, when the natural honey-flow should come on, its bees would swarm unless the special construction of the hive should remove entirely all desire for it.

But, unfortunately, Mr. Burt had a rather poor season. Very few if any of the colonies in his regular hives swarmed; but in order to make this one do so he gave it regular stimulative feeding. This he continued until the honey-flow came on; and, even after it began to lag, he commenced jamming in the feed to determine whether or not he could yet force the bees out. All his efforts were unavailing, however. At no time did they show any disposition to form any swarming-cells, notwithstanding the forcing referred to.

Mr. Burt requested me to come down and see that colony. I arrived at the yard late one summer afternoon; in fact, it was getting toward September. I took a couple of photographs, and the results are here shown. No, that hive was so jammed full of bees that they were actually crowded out of the hive at the entrance. I might state that it was very warm that afternoon. The honey-flow had entirely ceased, and the bees were loafing. We dissected the hive and then took another view.

To our newer readers I might explain that this hive is no larger than any other hive, although it has nearly twice the cubic capacity of the regular hives with the same number of frames.

The hive proper is a sort of skeleton on which rest closed-end brood-frames. Two side panels projecting a bee-space above the frames close up the two outside combs, and the closed ends of the frames shut out the wind and weather at the ends. One cleat is placed on top of each end of the frames to close up the bee-space at the front and rear. When the honey-board is set on top the whole hive is enclosed.

But the construction of the frame and the slatted dividers are the two features that constitute the peculiar construction of the brood-nest. Between each brood-frame is interposed what we may call a bee-spaced dummy or slatted dummy, as called by the inventor. These latter are made as follows:

Perpendicular cleats  $\frac{1}{2}$  in. thick and  $\frac{3}{8}$  in. apart, and one inch wide, edges toward the combs, are secured to the top and bottom,

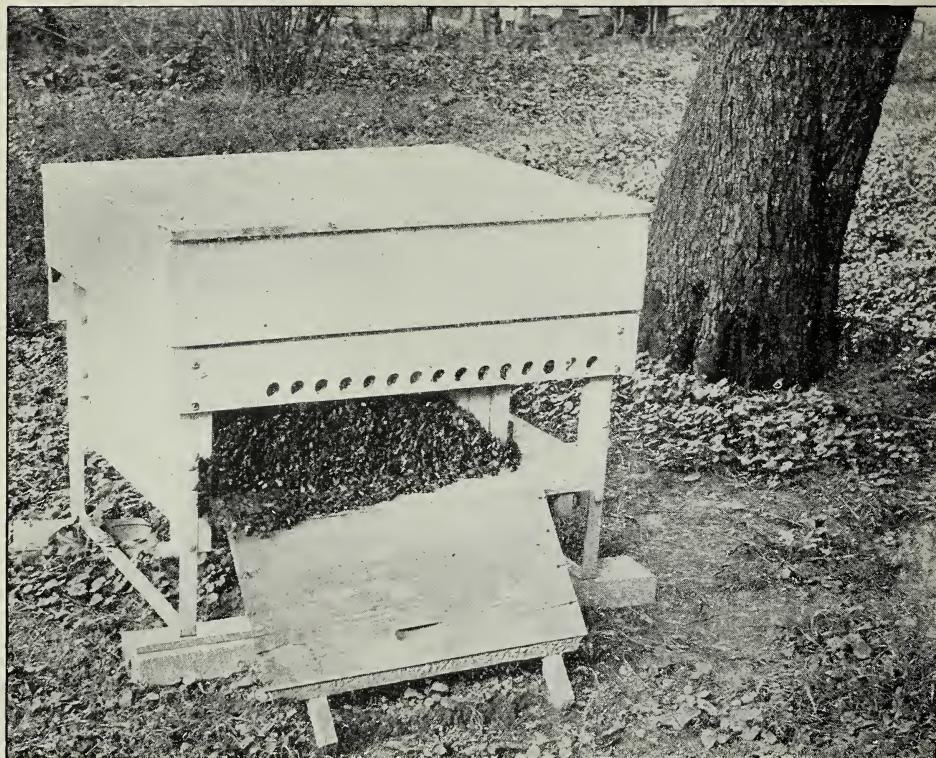
bars of a dummy frame. The regular brood-frame proper, instead of having one end-bar at each end, had several of them, as will be seen by the larger illustration. Only the outside end-bar is closed-end. One of these slatted dummies is set down between each pair of brood-frames.

Now you ask, "What is this for?" Simply to give a clustering-space one inch thick of bees between each set of frames. In other words, Mr. Aspinwall spreads his brood-

nest by increasing the space between each frame one inch instead of the ordinary regular bee-space. Of course, this inch space would be filled with brace comb were it not for the slats bee-spaced apart on a perpendicular line, the edges being next to the brood itself. It is because of this clustering-space between the frames, and because bees have more room through which they may pass up into the supers, according to the inventor, that all possible swarming is re-



ASPINWALL HIVE DISSECTED—MR. BURT STANDING IN THE BACKGROUND.



THE ASPINWALL HIVE IN THE APIARY OF VERNON BURT.

moved. Just why this should operate to prevent this I have not been able to understand fully; but after two or three seasons of test, Mr. Aspinwall has found he has been able not only to increase his honey crop but at the same time prevent swarming.

Quite a number now of prominent bee-keepers are testing this hive; for it should be understood that Mr. Aspinwall is not offering it for sale, as he wishes to test it thoroughly, and when he is sure of what it will do in the hands of bee-keepers in different localities under different conditions he will then be prepared to place it on the market, provided, of course, it meets the expectations of himself and friends. We expect to test more of these hives this coming summer; and, while we are making no claims for it, we know that Mr. Burt tried faithfully to force a swarm out of his hive, and failed entirely. Under the conditions of a *natural* honey-flow—not too heavy, but just enough to get bees excited—this hive might cast a swarm.

Perhaps some one will ask what those rows of holes are in the upper front board. A similar board is situated in the rear with another set of holes opposite to those in front. A cleat with rounded ends is inserted in the two corresponding holes opposite that come the nearest to the follower-board when all

the frames are in place. A wedge is then pushed down between this cleat and the follower, pressing the latter snug up against the frames.

The extra end-bars are for the purpose of giving additional clustering room around the ends of the combs. This big wall of bees around each comb must necessarily give a splendid protection to the brood; and as the bees have extra room in which to cluster (as provided by the slatted dividers or dummies) they are not ordinarily inclined to hang out around the front of the entrance, says Mr. Aspinwall, although apparently they did so in this case, as evidenced by the smaller illustration; but it should be remembered that it was a very warm afternoon, with no bees flying.

I hope to make Mr. Aspinwall a visit in the height of the honey-flow next summer, as I wish to see the condition of the hive when the swarming season is on, or what will be naturally the swarming season with an ordinary hive.

In justice to Mr. Burt, perhaps I ought to explain that he was not aware that his figure was to appear in the picture, otherwise he says he would have struck a more erect position. He was simply waiting for the "gun to go off," thinking it would shoot only the hive.

## BEE - KEEPING IN TEXAS.

A Visit to some of the Apiaries in the Vicinity of Uvalde.

BY H. H. ROOT.

At the National Bee-keepers' convention in San Antonio, Nov. 8, 9, and 10, of last year, Mr. D. M. Edwards asked me to come out to Uvalde and look over the country. This southern country was all new to me, so I was very glad to go, after the bee-inspectors' meeting was over that followed the regular convention.

It was with the greatest of interest that I stepped from the train when we pulled into Uvalde, for I knew something of the reputation which that locality had. Still, it was a surprise to me to find out later, that, in the year 1903, a million and a half pounds of honey had been shipped from that very station. Is it any wonder, then, that bee-keepers there were almost as numerous as poultry-raisers here in the North?

The Southern Pacific Railroad does not go through the town, but passes within a mile of it. Hacks were waiting to take the passengers into town. Although this was the 12th of November, the weather was very warm and the roads deep with dust. My overcoat hanging limply over my arm made me warmer still, and for once I wished for



FIG. 1.—ONE OF THE DRY RIVERS OF TEXAS.

the cold winds and the freezing weather of the North.

Mr. Edwards was waiting for me when we drove up to the house, and it wasn't very long before we had started in a light buggy for his ranch, twelve miles from town, intending to stop at several apiaries on the way. We took a somewhat roundabout route—one that Mr. Edwards had not been over for some time, and we had all kinds of trouble for the reason that, within the last year or two, wire fences had been put up in many places, preventing any one from driving promiscuously "across lots," and some of these lots, by the way, are rather large. One pasture was over thirteen miles long. Think of going after the cows in the evening and finding them at the other end of the pasture! Some will wonder how we could drive

without any roads; but, as a matter of fact, the natural surface of the ground is as level as a table, and, in many places, almost as hard. Whenever a track becomes rutty it is easier just to drive to one side of it than to fix it up. We lost our way for quite a while, and at two different times had to cross one of the dry rivers, about a quarter of a mile in width, which are made up of stones worn round and smooth, about the size of watermelons—see Fig. 1. Except when it is very wet, the water is not high enough to cover the stones, but runs far beneath the surface.

We did not reach the first apiary until after sundown, and then we found the owner, O. T. Burkett, had been extracting, evidently, but had just gone away. Although it was getting dark I managed to take a general view of his yard, which is shown in Fig. 2, and also of his solar wax-extractor, Fig. 3. The hot sun that shines almost all the time makes the solar extractor very valuable. Mr. Burkett's apiary looks as though it were situated in a remarkably well-kept or-

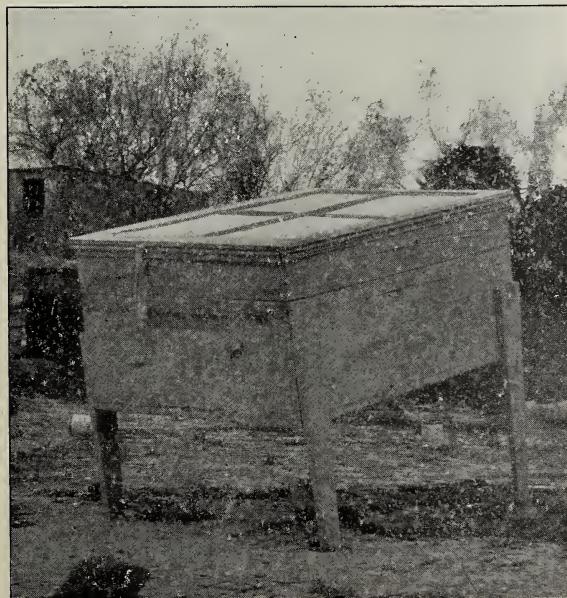


FIG. 3.—BURKETT'S SOLAR WAX-EXTRACTOR.



FIG. 2.—O. T. BURKETT'S APIARY NEAR UVALDE, TEXAS.

chard; but the trees shown, instead of being fruit-trees, are the scraggly catclaw, mesquite, etc., which grow about so far apart all over the country. Without thinking I found myself wondering several times why they didn't plant their trees in straighter rows. Great bunches and clusters of mistletoe are seen on nearly every tree.

We did not reach the ranch until after dark, and so there was no chance to take pictures. The next morning, however, we

were out early. Fig. 4 is a view of the apiary at the ranch, showing the same growth of trees and the level ground. The covers shown in this picture are all home-made. They contain a dead-air space, and are covered with tin. Mr. Edwards says that flat covers will not do in that locality, as the sun is too hot. In one year he had \$500 worth of comb honey melt down because it was in hives provided with flat wooden covers.

*To be continued.*



FIG. 4.—D. M. EDWARDS' APIARY AT HIS RANCH, TWELVE MILES FROM UVALDE.

## FEEDING SYRUP IN ZERO WEATHER.

## Hot Bricks to Raise Temperature of Hives.

BY W. B. RANSON.

As this subject is now on in GLEANINGS, and experiments are being conducted by yourself, I offer this little item. I have gone all along the ground covered by Dr. Lyon, p. 95, and failed; but by a different method I have succeeded admirably, and for the good of bee-keepers I offer the method as follows:

Take an escape-board and a Miller feeder. Take out the escape and daub a little honey around the opening and also on the beeway up the feeder. Place the feeder over the opening in the board and fill it with honey and syrup, and on each outside of the feeder place a piece of thin board 18 in. long, and wide enough to come  $\frac{1}{2}$  inch above the top of

ny. Results, in less than 25 minutes the colony will be on a regular summer-time move. The bricks keep the feed and hive hot, and the carpets hold the heat until the excitement of the bees gets up and keeps the hive hot for about 24 hours. Now, this can all be done in zero temperatures, and the one feed will save the colony, as no other feeding will be necessary *provided* the feeder holds enough, as it will all be stored in the combs before the hive cools off and the bees quiet down, when the fixtures can be arranged as before the work was done.

I have for several years practiced this, and have not lost one colony so treated, and that, too, with the loss of very few bees caused by feeding in mid-winter.

New River Depot, Va., Jan. 26.

[Your plan of mid-winter feeding does involve, after all, considerable work. It will not be an easy job to heat up some twelve



BENJAMIN PAINES APIARY AND ORCHARD AT ROSWELL, IDAHO.

the feeder, and six or eight strips of wood  $\frac{3}{4}$  thick, 12 in. long, placed across on top of the edges of the boards on the sides of the feeder. Take this to the colony to be fed, and first put wire cloth, six meshes to the inch, over the entrance, and quietly remove the cover and put the board and feeder on. Now put two empty supers on; and on the strips across over the feeder, place 12 or 16 bricks just hot enough not to set the hive on fire, and put the cover on top and spread two pieces of carpet over all, large enough to come to the ground and over the entrance. To keep it as dark as possible, put a large piece of roofing iron on to shed water in case of rain, and rocks and bricks on the bottom edges of the carpets plentifully, in case of high wind, and the job is done with. The feed prepared, and bricks hot, it takes only about three minutes' work to the colo-

or fifteen bricks, and then convey them to the hive that is to be fed. If there were to be several colonies so treated it would take quite a little time. Our correspondents have reported favorably regarding the use of hard candy made of granulated sugar and water. As this gives excellent results it would seem to involve considerably less labor.—ED.]

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AN APIARY IN AN ORCHARD; HONEY VINEGAR.

I am sending you a photo of our bee-yard with myself and wife standing among the bees. With 60 colonies, spring count, they increased to 95. We sold \$557.80 worth of honey, besides what we used for ourselves, and made a barrel of vinegar, worth \$15.

Roswell, Idaho. BENJ. PAINES.

## SCHOOL-TEACHING AND BEE-KEEPING.

### The Clipped-wing Plan and How it Enables a Professional Man to Keep Bees; Laying Workers Caught in the Act.

BY M. JOHNSTONE.

The engraving shows a photo which I call "The End of the Harvest." My interest in bee-keeping began in 1900, when a friend presented me with a colony of bees. My mistakes at first were, opening the hive in unsuitable weather; striving for too much increase, and attempting to experiment on a suitable hive. By 1903 I had increased to about fifty colonies, where I now keep them.

Those years of study gave me a pleasure which I hardly can hope to equal in any further researches unless it be that of queen-rearing.

An amateur usually dislikes to lay claim to any original discoveries, but I think I have been among the very few to observe laying workers in the act of depositing eggs,

many bees. The clipped-wing plan, or any other good non-swarming plan, will serve to hold the bees until the teacher can give his full time.—ED.]

## HONEY-PACKAGES.

### A New Idea in the Way of a Pasteboard Box Lined With Paraffine Paper; a Practical Package for Candied Honey.

BY HOWARD C. MILLS.

To those whose time is limited, the process of liquefying candied honey and putting it in cans or pails should from the start be abandoned. You may, in rejoinder, say that it takes about as long to liquefy it after being candied in the bottles as after being candied in the storage-tanks; but I can not afford to liquefy it at all, and do not believe it is necessary to do so. In other words, the people may be educated to the use of candied honey. This I have partially proven in my own experience, and intend to keep at it until my



THE APIARY OF A SCHOOLTEACHER MANAGED ON THE CLIPPED-WING PLAN OF SWARM CONTROL.

as reported in GLEANINGS, page 846, for the year 1900.

My crop has averaged a ton each season during the last three years, even in this bad year. Being engaged in teaching I work by the clipped-queen system, using an eight-frame hive. Supers are placed on the brood chamber in the spring as soon as the strength of the colony warrants. Combs of brood are taken from below in exchange for full sheets of wired foundation, and placed above the queen-excluder. Swarming is thus retarded until the summer vacation commences, when full time can be given them. Last season only one swarm issued during the last week of June; and the next Monday, when I was with them, ten swarms issued. I have never known a swarm to leave the yard under this system.

My colonies are wintered on the summer stands packed in cases, seen in the rear of the accompanying engraving.

Brentwood, Ont., Can.

[School-teaching and bee-keeping go very nicely together, providing there are not too

theory becomes practice. Others have had the same theory, and many devices have been tried for getting candied honey in such a condition that it would be attractive, convenient, and salable, as Mr. Hershiser puts it.

Candy-pails were the first to be used by me, and they were suggested by a Canadian in a bee-keepers' convention. I immediately dumped some pails on to the counter of Syracuse stores, and, being a new thing, they took well and people bought a second time. This showed me that they would eat candied honey. But this at its best was a sticky job for the clerks of the store, and the board on which it rested could not be kept neat and clean, and a better dust-collector could not be devised. To people who crave dirt and dust I still sell candied honey in candy-pails, but not until I have offered them something better. This something better is, according to my ideas, the most attractive, convenient, and salable package at present available. It consists of a neat white pasteboard box lined with paraffine paper, neatly labeled, with a tissue paper over the entire box, tied



FIG. 1.—MILLS' PASTEBOARD PACKAGE FOR CANDIED HONEY.

with a colored string in a neat knot. A further description of the parts will show why the package fulfills all of the requirements. First, it is most attractive. It holds one pound of honey when filled within  $\frac{1}{4}$  inch of the top of the box, and is almost a cube in form.

In bringing the box package up to its present stage of perfection, cheapness has been the one important point, and in this it excels all other good packages used for candied honey.

It may be interesting to those who contemplate using such a package to know the many points in its favor, and its drawbacks, if any. For two years I have been watching and testing, so that I know what it is. The method of putting in the lining, and doing it quickly, seemed at first to be a slow process; but I have perfected this part until now one may line 150 boxes in an hour by hand, and a machine

may be used that would put in the lining as fast as one can put together the one-piece section. The box is what is called hand-made, and is thus very stiff and strong, and they are all of the same size. A machine-made box would not do as well, as it would



FIG. 2.—THE PAPER PEELED FROM THE HONEY THAT HAD BEEN IN THE PASTEBOARD BOX TWO YEARS.

not sustain sufficient load for stacking the boxes like a brick wall. The lining is of the best quality, and every angle and fold is made according to rule, and has a reason for being as it is. My test for a honey-package was determined on the start; and, altho' thin honey

should never be stored, a package should be good for containing the thinnest honey obtainable. To make the test complete I filled several boxes with water, in the summer, and left them for three months, and there was no sign of leakage. The honey was then put into boxes in the fall, before being candied, and drawn from tanks. Weighing is not necessary, as the covering projects  $\frac{1}{4}$  inch down the inside, and below this point gives capacity for one pound of honey. As there was absolutely no leakage, the package was very attractive, which fulfills Mr. Hershiser's first requirement.

Now as to convenience. A customer buys a box; and if the dealer delivers it he does not have to handle it any differently than a box of baking-powder; and when the consumer prepares it for the table the cover is removed easily and a slight jar with box inverted drops the cake of honey on to a plate, the paraffine paper easily leaving the cardboard surface. Next the corners are unfolded and paper peeled off, leaving a hard polished surface, and there is not a particle of waste. The paper, having been folded correctly, this is easily accomplished.

I recall a method of putting the paper in the box, that was used by one of GLEANINGS' correspondents. He said, "Lay paper on top of the box, and push it down into the corners." That would not give a very satisfactory result, in my opinion.

The paper in this box is always to be folded in the same way, and every fold has its purpose, and assists in preventing waste and making paper cleave easily from the honey surface.

Now the last and most important requirement of a honey-package is, that it must be the most salable. Theorizing will not go far in deciding this point. I will state that I filled several hundred of these in the fall of 1905, and early in the winter they were of-



A TEXAS "HORSELESS CARRIAGE" FOR MOVING BEES.

See "Bee-keeping in the Southwest," on page 388.

fered for sale to a Syracuse store. At first sight the store-manager wished to buy the entire number, and, of course, wished to have exclusive control of the new package. This would not be right, and they were easily distributed among several stores.

The honey put into them was of the 1904 crop, and soon candied hard. One of the most valuable considerations to the consumer is the fact that the honey put into them must be first class, as sour or unripe honey will not be a success as candied honey.

I have sold several of these boxes before the honey had candied, but do not recommend that method. Fill the boxes before the honey candies; put up pounds; pile them into a wall; retail them for 15 cts. each, and sell them to the dealer for \$1.40 per dozen; he can then make a nice profit, and if he should carry some over to the next year they are just as salable as when bought, and he need not fear breaking them.

To those who wish to work up a home trade, and to bee-keepers who want a nice cake of honey for their family table, I recommend this honey-box, which stands for attractiveness, convenience, and cheapness.

Syracuse, N. Y.

[We regard this as an excellent honey-package, especially for candied honey. The two samples sent us by mail (as shown in the half tones) arrived in fine condition. Mr. S. D. House, of Camillus, N. Y., a neighbor of Mr. Mills, exhibited these same packages at the Brantford convention. They received very favorable comment, and there is no doubt that bee-keepers, if they only think so, could do a big business in putting up candied honey in this attractive form. The fact that the package can be so easily filled with liquid honey, and left to candy, is a large element in its favor. Some of our subscribers have not succeeded in cutting up a

big square can of honey into bricks; but even if they did succeed, the bricks were too irregular in size to pack well. Here is a package, apparently, that should fill a "long-felt want;" and while it may be too late to consider it this season the idea can be laid aside for next winter.—ED.]

## THE RELATION OF THE ENTRANCE OF THE HIVE TO THE WINTER CLUSTER OF BEES.

### A Possible and Even Probable Solution of the Problem.

BY J. E. HAND.

*Mr. Editor:*—Believing that a correct knowledge of the forces that govern the position of the winter cluster of bees, as well as the correct principles of ventilation, are essential to the successful outdoor wintering of bees, I will endeavor, in as few words as possible, to explain why bees cluster over and near the entrance in severe weather in early winter. In attempting to explain the relation of the hive entrance to the winter cluster of bees, some of the writers of bee literature have fallen into the very common error of taking the effect for the cause. For instance, they find the cluster well forward, and near the entrance, in early winter, and hastily jump at the conclusion that the entrance is too small, which all looks very plausible from a theoretical point of view, and straightway the entrance is made larger, and still the cluster remains in the same position, which seems to assure them that their theory is correct, and they have solved the problem of correct ventilation in their minds. The very nature of the honey-bee, as well as a correct knowledge of the impulse that governs the acts of the bees, would tend to show to the close observer of bee nature that they were already suffering from an overdose of ventilation, and were clustered over the entrance for the sole purpose of shutting off the circulation of cold air and regulating the temperature within the hive. Did you ever attempt to drive the bees down out of an extracting-super after they had settled there for the winter by leaving the cover off from the hive during a cold night? If you have you will know how vain is such an attempt, for the bees will crowd into the spaces between the combs to shut the cold out and laugh at your efforts and hold the fort in spite of the cold; and this is very much the way they will often do in case of a very large entrance. Every act in the life of a bee is directly in the interests of the welfare of the colony. Individual comfort has no part in the economy of the hive, and a bee does not hesitate to sacrifice its life for the welfare or defense of the community. This whole matter can very easily be proven. For instance, we find a colony of bees in the early winter with an entrance  $\frac{1}{2} \times 12$  inches. We are pretty sure, before we open that hive, that the cluster will be well forward, and low down toward the entrance, and up-

on examination we find that such is the case, so we say that the entrance is too *large*, and we will immediately contract the entrance to  $\frac{3}{4} \times 3$  inches, and place a rim under the hive, forming an air-chamber, and remove the cover, spreading several thicknesses of heavy quilts or old carpet over the brood-chamber, letting them come well down over the sides of the hive, and push down over the whole a box that has previously been covered with black roofing paper; and in less than 48 hours, or just as soon as it is warm enough for the bees to move, the cluster will be found in the warmest part of the hive, which is the very top, snugly tucked up close to the quilt, where they will remain contented and happy during the rest of the winter, and where in the *sectional* hive they will locate their brood-nest in the spring. These are facts based upon a careful study of the instincts of the honey-bee, which any one may prove to his entire satisfaction. Over-ventilation kills more bees in outdoor wintering than any other one thing except starvation, and the fact that bees will survive the winter and come out alive in the spring with an entrance so large as to be entirely out of all proportion to the needs of the colony, only proves the wonderful powers of endurance of a strong healthy colony of bees. With a sufficient air-chamber under the hive, which should always be provided, a one-inch auger-hole will afford sufficient ventilation for the strongest colony of bees when wintered out of doors; and, when covered with wire screen, to keep the mice out it is about the safest kind of entrance for our northern country. However, three one-inch holes with a slide to regulate the ventilation according to the weather would be an ideal entrance for winter.

Birmingham, O.

[Our correspondent is a keen and close observer, and we are inclined to believe he has suggested the cause of the bees clustering over the entrance. We shall be glad to hear from others on this point.

His conclusion as to the right size of entrance is quite in harmony with our own experience and practice.—ED.]

## DISTURBING COLONIES IN CELLARS.

### Is the Effect Really Injurious? Feeding Honey in the Cellar; Does it Unduly Excite the Bees?

BY T. F. BINGHAM.

Reading Mr. Alexander's fascinating description of his winter cellar for bees, and his particular emphasis on winter disturbance, as given in Jan. 1st GLEANINGS, page 27, introduces the question anew. Are these reliable data on which to predicate the generally prevailing opinion that such disturbance is detrimental to bees? There are many bee-keepers who have moved bees in winter and put them in cellars. One gentle-

man near me hauled about fifty colonies sixty miles in December, and put them in a cellar without their having an opportunity to fly till April. They wintered finely, and did exceptionally good work the following season, and have continued so to do every year, though they have not had their winter sleigh-ride—a treat relating to their ancestors. There may be, as is often the case, an opinion that comes to us for which we are not responsible, and which has come without definite observation.

This theory that it is detrimental to disturb bees in winter has been potent many years, which, of itself satisfactory, may not have unquestioned experimental support. Bees in their normal condition, when idle, cluster and apparently hibernate. They cluster just as closely after the brood is out of the combs and the queen has stopped laying, as they do in midwinter in an atmosphere of the same temperature. They are just as lifeless, and as easily vexed, as in midwinter.

My experience has led me to the conclusion that bees in their natural condition in warm weather fly frequently when not brooding, even though the broodless period may last several months. At such times it is reasonable to presume that the whole colony is active—at least for a short time; yet we do not read of such flights being detrimental to them.

Having visited my own cellar for years, and swept the floor of my cellar as often as once a week or two during every winter, is evidence that I did not consider disturbing them detrimental to their successful wintering.

This winter I have set apart five full colonies of bees, all with young queens to feed, as often as once in two weeks on hot buckwheat honey. I fed them so as to have about two pounds in each hive. The hives are my regular half-winter size, and contain seven frames holding combs  $5 \times 12$  inches. I have already fed them three times. I fed in a shallow  $\frac{1}{2}$ -inch-deep round cake-tin, and gave the five pounds of hot buckwheat honey—about a pound apiece. The tin plates have no floats, and are crowded snugly up against the frames and bees below the clusters. They wake up and feed and roar just as they do in summer when fed. They clean up the plates, and all is still as before. This feeding does not seem to disturb the other bees, of which there are more than 100 other colonies close to them.

I am trying this experiment to satisfy myself. It may be a success or it may be five colonies out.

I am trying some other experiments which may be of value as facts for bee-keepers. Everything needs a few facts at each end of it.

Fairwell, Mich.

[As we have already stated, this question of disturbance in bee-cellars depends somewhat on conditions. Frequent disturbance does not cause nearly as much trouble as when the bees are disturbed only once in a

while. It is hardly conceivable how any bees could have more disturbance than our indoor-wintered colonies directly under our machine-shop, with heavy machinery in motion overhead; yet we venture to state that there are very few bee-cellars that give better results in wintering than ours.—Ed.]

## WINTERING WITH ENTRANCES COVERED WITH WIRE CLOTH.

### Some Experiments with Bees Confined in a Cellar.

BY H. T. JACKSON, M. D.

Reference to shutting bees in their hives while being wintered, in recent numbers of GLEANINGS, leads me to give my experience with wintering bees, which began in the fall of 1904, when I placed four colonies, in Dovetailed hives, in an open shed. A cushion of dry leaves in an empty super was placed on each hive, and all were thoroughly packed in leaves, with only the fronts exposed and the entrances closed with wire cloth. A weak colony, which I feared would not survive the winter out of doors, was put in the cellar, with entrance also closed by wire cloth. No suitable weather for a flight occurred during the winter, so those out of doors remained shut in until spring, being no better off in this respect than those in the cellar. A few bees escaped from one hive, but perished a few inches from the entrance. Doubtless a great many would have shared a like fate but for the wire cloth over the entrance.

They wintered only indifferently, there being considerable dampness and mold in the hives, while the one in the cellar came out in good condition in the spring, and was the best colony the following summer.

Profiting by this experience I built a bee-room in one corner of my cellar, which contains a furnace, by covering a skeleton frame with building-paper, making it as tight as possible. This corner had once been occupied by a cistern, and in the wall were two three-inch tiles for intake and overflow of cistern. The lower one was continued by a wooden box down to the bottom of the room, and the upper one was carried up similarly several feet outside of the house, for ventilation.

In the latter part of November my 12 colonies were placed on ordinary bee-stands around three sides of this room, each having a light cushion of leaves in a super on top, with the  $\frac{1}{2}$ -inch entrances, the width of the hives, covered with wire cloth tacked to end-bars and a top cross-bar.

Last winter was a very mild one here, and I had some trouble in keeping the room cool enough. The door of the bee-room was close to that of a vegetable-cellars. When both were open they nearly came together, virtually connecting the two. By this means I was

enabled to give them colder air when necessary, which soon quieted them down.

Every hive was weighed as it was taken in and out of the cellar, with the following results:

Colony.	Wt. Nov. 23, '05.	Wt. Apr. 13, '06.	Honey cons'd.
1	49½ lbs.	43 lbs.	6½ lbs.
2	56 "	44½ "	11½ "
3	45 "	38½ "	6½ "
4	66 "	55½ "	10½ "
5	46 "	41 "	5 "
6	52 "	42 "	10 "
7	60 "	52 "	8 "
8	49 "	40 "	9 "
9	45 "	35 "	10 "
10	43 "	37 "	6 "
11	47 "	37½ "	9½ "
12	57 "	48½ "	8½ "

They all came out in good condition in the spring, with hives dry and clean. The principal care during the winter was to keep the temperature even and the entrances open.

Last fall I added an improvement to the bee-room by boxing in a window three feet distant, on the opposite side from the tiles, connecting it with the bee-room. Another window inside, opposite the outer one, prevents loss of light in the cellar. The outer window is on hinges, and is opened and shut by means of a rod attached, having a hook on the cellar end, which may be hooked into links of a chain fastened to a joist above to permit any size of opening desired.

In mild weather the window is kept partly open, so the bees are virtually in the open air at a temperature of from 40° to 45°. A thermometer, suspended by a cord, hangs just inside the door, and can be reached and drawn out for observation without going in.

I have 17 colonies in the room at present, and have the temperature fairly under control. As one attends to the furnace morning and night it is but little extra work to adjust the window to conditions of weather outside during changes. Steady even weather requires no adjustment. Perhaps the leaf cushions and supers are unnecessary; but they permit sliding the covers partly off, if upward ventilation is needed, without bees escaping; they also allow the placing of candy or honey over the frames if feeding in spring is necessary.

I fed some in this way with candy last spring with good results. A two-inch rim under No. 2, with front covered with wire, produced no better results, but no care was necessary to keep entrance clear.

Bees which leave the hive in the cellar or bee-room never return. Why let them out? Those that *must* die can die as well inside, while those able to fly out can be saved. The entrances of some hives remain clear all winter, few bees dying, while others lose a lot of bees—proportioned, I suppose, to the number in the colony and to their ages.

This method of wintering bees is very satisfactory to me, both in saving of bees and honey, as shown by the above table, and comes about as near a certainty as we can get, in my opinion.

Verona, N. Y.

## WEAK COLONIES IN THE SPRING.

The Alexander Plan of Building them up; some Experiments to Show that, with Two Colonies, it was Not a Success.

BY WM. L. COUPER.

I regret to say that I am one of the comparatively few who failed in trying Mr. Alexander's plan of placing a very weak colony above a very strong one, with an excluder between. I quite agree with Mr. Alexander that the method is one of the most valuable kinks that have been given to the bee-keeping world, and the fact that it has failed with some is merely a proof of the fact that no method will suit all cases. I tried the plan with only four colonies. In one case I exactly followed Mr. Alexander's instructions; in the other I varied to the extent that the upper colony was not very weak and the lower was only marked strong, not *very* strong.

In order to make the appended notes of my experience with this scheme intelligible I must give a short explanation of my system of spring management. I look at each colony once a week, weather permitting, marking the date and condition of each opposite its number, in a note-book, thus:

No. 30, w 2, May 7, means that on that date colony No. 30 was weak and contained two frames of brood.

To show the results of treated colonies compared with those not treated I give these with eight colonies as follows:

Col.	April 20	April 28	May 7	May 14	May 28
A1	v s 3	s 4	m 5	s 6	s 7
A2	v w 1	v w 2	v w 2	w 3	w 3
B1	s 3	s 4	s 5	s 5	s 6
B2	m 2	w 2	m 3	m 3	m 4
C	v s 3	v s 4	v s 6	v s 7	
D	v w 1	v w 2	w 3	m 4	m 5
E	s 3	s 4	s 6	v 7	
F	m 2	m 3	m 4	m 5	s 6

A1 and B1 were the strong colonies selected, and A2 and B2 the weak ones to be placed over them. C and E were strong colonies, and D and F weak ones managed in some other way; v stands for very; s for strong; w for weak; m for moderate. The figures show the number of combs of brood.

It will be seen by this table that the treated colonies at the commencement of the test were as nearly as possible in the same condition as those untreated, selected for comparison. In the case of the former, neither top nor bottom story built up nearly as quickly as in the latter. When any colony builds up to six or seven frames of brood in an eight-frame hive I give a second story, and, after this, records are kept in another place. I can not give the records of A2 and B2 after they were placed on their old stands, as the loss of field bees weakened them so that I had to build them up by other means. The colonies were joined quietly, and there was no fighting. A was the strongest colony in the apiary, but it did not build up as fast as C.

I can not answer absolutely for the dates,

as I wrote them in pencil, and they are not very easy to read; but they are correct to within a day or two.

It may be well for me to explain what I mean by strong and weak. A colony marked *v. s.* would be overflowing with bees; one marked *v. w.* would have two frames covered pretty thoroughly with bees. I have never had one weaker than that.

Cannington Manor, Saskatchewan, Can.

### WET BEE-CELLARS.

#### The Alexander Method for Weak Colonies.

BY E. TARR.

I have been interested lately in reading the various ideas about wintering bees in cellars. While I always try to get my bees into the cellar as quietly as possible, I know of two bee-keepers near here who load the hives on to a two-horse sled and haul them to the cellar door, and their bees winter finely.

I knew a man who had one colony, and he put it on the bottom of a truck-wagon without springs, and hauled it nearly six miles over the frozen ground to put it into a cellar. It wintered finely, and the next season that colony with its increase produced over 100 lbs. of comb honey.

The first year that I used my present bee-cellars the bottom was very wet and muddy when we put the bees in, for we did not get it built until the last of November, and it was a very wet fall. The following March there was a heavy rainstorm; and as the lower end of the drain was frozen up the water came into the cellar over  $1\frac{1}{2}$  feet deep, close up to the bottom-boards of the hives. The water stayed 24 hours before we got the drain open and drew it off. The bees wintered finely.

While not advocating these ways of wintering, I am merely stating facts.

#### HEAVY COLONIES FOR COMB HONEY.

I have been quite successful in producing comb honey, and for years have been in the habit of uniting all new swarms except those that came out very early. We generally put three or four into one hive and gave them from three to five supers of sections. While they would store honey very fast (in one case 80 lbs. in 8 days), most of them would swarm in about ten days and leave a lot of unfinished sections. The last few years I have been raising the hive up an inch from the bottom-board all around, and it works to a charm. The best one last summer made 150 finished sections.

#### THE ALEXANDER METHOD OF BUILDING UP WEAK COLONIES IN THE SPRING.

Last spring I tried Alexander's method with weak colonies, putting them on top of very strong colonies. It worked nicely, except in two cases. On one strong colony there was a small hole in the side of the hive so the queen-excluder did not fit well, and

the queen in the upper hive came up missing. One weak colony I took off too soon. I think the method is all right if we use common sense when we practice it.

Napleton, Me.

### A SYMPOSIUM OF OPINIONS ON THE ALEXANDER PLAN OF BUILDING UP WEAK COLONIES.

[Few things that we have ever published have attracted more widespread attention than the Alexander method of uniting weak colonies. Many have succeeded, and some others have failed. Apparently there is so much to be gained by the method that, if one can make a success of it, it will pay him well to see whether he can discover the cause of failure. The subjoined reports, favorable and unfavorable, winding up with an editorial footnote, may serve to point out the difficulty.—ED.]

#### Will it Work in Every Instance? More Details Needed for Some Localities.

BY F. A. BECKETT.

I have noted several times in the last few issues of GLEANINGS the success and failure of various bee-keepers who have experimented with the Alexander plan of building up weak colonies in spring. I set my bees out of the cellar April 2 (46 colonies), and they did not have a day warm enough for a flight until about the fifth or sixth of the month; but when that time came we had several nice warm days in succession. April 10 I selected five of my weakest colonies, each one having perhaps a pint of bees with one frame containing sealed brood in the center, a patch on both sides in the form of a circle, and about four inches across. These five colonies were placed on top of five of my strongest ones, which were rich in stores, and had six of those ten frames containing brood, and well covered with bees. All instructions were carefully carried out in each and every detail; and after reading Mr. Alexander's article in the Nov. 1st issue, p. 1357, I can see no place where I could have done differently and made any improvement, as I understood him perfectly in his first article. Ten days after doubling them up I made examination of all of them with following results. All five colonies above the excluders had ceased operations—brood deserted, and queens missing or dead. All stores had been carried below, and, so far as I could see, they had simply united below in one strong swarm.

Now, Mr. Editor, to be fair in the matter, let me state that I have gained considerable knowledge by reading various articles written by Mr. Alexander; and while I have no doubt he succeeds in this operation in his locality I can not be convinced that it will work in *all* localities. There are certain conditions that vary. I will give it another trial this coming spring, but on a smaller scale, and I would advise others who wish to try it to be very cautious and not put too many colonies into the experiment unless they have them to spare. If this manipula-

tion can be made a success in all locations, then Mr. Alexander will have to give us more details to go by, as I am almost convinced that, to make a success of it, there are yet some few points where we are in the dark.

Penfield, Mich., Dec. 7.

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**ALEXANDER'S PLAN OF BUILDING UP WEAK COLONIES A SUCCESS.**

GLEANINGS, in the past year, has given its readers a most excellent bill of fare, especially in the very valuable articles emanating from the pen of Mr. E. W. Alexander and a few others. I tried his plan last spring, of building up weak colonies by placing them on top of strong ones. I had three stocks that had become very weak from spring dwindling; and when I noticed it in the fore part of May I put them on strong colonies adjoining, placing two perforated queen-excluders with bee-space between them, between the hives, so as to keep the queens apart. This was done quietly, without any jarring. These were examined once a week to see how they progressed. In about four weeks two of them were taken down. All four being strong in bees and brood they were given surplus cases. The third one was left on a week longer, it being very weak when placed on top, not having more than half a pint of bees, and about six or eight square inches of capped brood. This colony would have dwindled right away, and the other two would have taken all summer to build up had I not placed them on the strong colonies. My bees were not wintered in the cellar, but on summer stands, as per illustration in GLEANINGS about two years ago. I believe that this method of building up weak colonies will work all right at any time when honey is coming in, or by judicious feeding when nothing is being gathered away from the hive,

W. H. KIRBY.

Oshawa, Ont., Jan. 1, 1907

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**ALEXANDER METHOD OF BUILDING UP WEAK COLONIES NOT SUCCESSFUL IN NEBRASKA; NEVER PAYS TO KEEP OLD QUEENS.**

I was much interested in the Alexander method of building up weak colonies, as we bee-keepers all have more or less weak colonies in the spring. Last winter I wintered several late swarms without extra feed; and as they had young queens I wanted to save them; so I put queen-excluders on a few extra strong colonies, and put weak ones on top. Next morning bees were carrying out dead bees; and upon examining the weak colonies I found every queen dead, and bees and honey all gone; so I begin to think it is in the location that the Nebraska bees are more strenuous than New York or Eastern bees; and if Mr. Alexander will bring out a light or medium colony of his bees and put them over a strong colony of Nebraska bees they will kill his queen just as soon as they can get at her. I then tried putting wire cloth

over strong colonies; but it left so much ventilation for both colonies that neither of them did as well as when left separate with a quilt on top to keep them warm, and a feeder on the side. Some of these light colonies with young queens built themselves up and made more surplus honey than the strong colonies with old queens. It does not pay to keep queens over three years old, no matter how good they may have been the first year, or at least that has been my experience.

Miller, Neb.

T. J. QUAIL.

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**UNITING A WEAK COLONY OVER A STRONG ONE; WHY SOME FAIL WITH THE ALEXANDER PLAN.**

A good many have had trouble in following the Alexander plan of building up weak colonies. I think the trouble in many cases is due to rousing up the bees and getting them uneasy before the weak colony is put over the strong one. Then the two colonies have a war for a while. I always use wire cloth between the two hives and never have any trouble from the lower colony going up and killing the bees in the upper hive. For some time I have wintered my weak colonies this way, on the summer stands. Last winter I had several weak colonies, and I put them all over strong colonies, making an entrance in the back with my knife through the hand-hole of the upper hive. This should be just large enough to allow two or three bees to pass out at a time. This is done on some cloudy day after very cold weather comes and the bees have quit flying.

Last year I had a weak swarm of bees. There was just one frame of bees and a young queen. I put this frame of bees in with nine frames of honey, and put the frames in a hive and set on top of one of the strongest colonies I had, and in February they got pretty strong, and I left them on till April; and when I set them off I had two strong colonies.

Milan, Ill.

JOSIAH JOHNSTON.

[We have received quite a number of reports on the Alexander plan of uniting a weak colony with a strong one. Most of them have been very favorable and a few unfavorable. The foregoing are fair samples. When successful, great results are secured.

When it is understood that we ourselves failed with this method, and afterward succeeded, there is hope for others who have failed. What, then, are the important requisites? The most important one is putting the weak on top of the strong *with as little disturbance as possible, with little or no smoke*. In Mr. Alexander's second article, page 1358, Nov. 1, last year, he places very strong emphasis on this, even to the extent of repeating himself. He even goes further and leaves the cover off the strong colony, in some cases, until the cool air forces the bees down. Then he puts on top the perforated zinc and the weak colony.

He also stipulates, as important in the

case of very weak colonies, taking a comb of brood out of the strong one, minus the bees, giving the same to the weak one. This has a tendency to equalize odors. The weak one with this comb of brood is not put on the strong colony for half a day, at the end of which time it is transferred to the strong.

One correspondent advised a wire-cloth screen between the upper and lower colony for a day or two, or until the bees could get all the same scent. After that time he substituted a sheet of perforated zinc, when every thing went well. This, in our opinion, would go a long way toward correcting the trouble of some of our correspondents.

We have received so many favorable reports in regard to this method of strengthening weak colonies with such excellent results, some going so far as to say that the hint was worth four or five years' subscription to GLEANINGS, that it behooves others who may have made a failure of it, to try again; but, as one correspondent suggests, it should, perhaps, be on a small scale on the first trial.

In this connection there is one consideration that is not mentioned by Mr. Alexander. He has a very gentle strain of leather-colored Italians. Such bees will generally unite without any fighting. But try hybrids or blacks, without a good deal of smoke, and there is liable to be a first-class little war on in no time, and the dead bees will be dragged out of the entrance by the scores after the battle. Smoke in any case with this method, with any bees, is liable to cause trouble. It is possible and even probable that any cross strain of bees could not be worked on this plan. We can hardly think that locality has very much to do with the matter; but we should be inclined to believe that the unfavorable results secured by some of our correspondents were due to the strain of bees. If a wire-cloth screen be interposed between the two divisions of such bees for a couple of days, the zinc board substituted at the end of that time, the results might be entirely favorable.—ED.]

#### THE PARKER FOUNDATION-FASTENER IMPROVED.

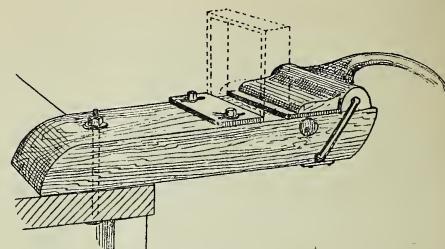
##### A Clamp for Holding End-bars while Drilling Them.

BY A. J. OBERLITNER.

Enclosed find sketches of two devices of my own construction, a foundation-fastener and a machine for piercing frame-end bars.

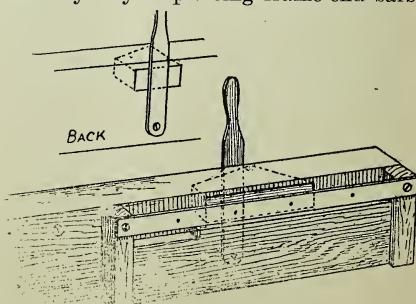
The Parker foundation-fastener, as it is made, doesn't work very well. In the first place, there is a paddle, as I will call it, for lack of a better name. It pitches up too much, causing a sort of scraping which will not stick the wax well, but has a tendency to roll it up, especially if it is a little cool. Just take a knife and some wax on a board, and try pasting it fast by holding the blade at different angles, and you will soon see that it works best when the blade is nearly parallel

to the wax. Note the motion and varying pressure required to make a good job of pasting the edge of a sheet of wax. Now you are ready to make a foundation-fastener. I will describe mine from which you will get the principle.



The drawing shows the construction clearly. It may be adjusted for any size of section by means of the iron plate held by the screws in slots, and by the eccentric washer which stops the lever at any point desired. The swinging hinge must have the proper length, and must also be hung just right. This is the whole secret of a fine working machine. With this I can fasten foundation starters at a lively rate.

In the Feb. 15th issue, of last year, C. W. Dayton submits a machine for piercing end-bars. It is quite ingenious; but at best, forcing an awl through a piece of wood is hardly satisfactory, for such holes will partly close up in damp weather and cause trouble if the frames are not wired shortly after piercing them. If we want a nice clean hole in wood we must remove the wood where the hole is to be; and the best thing I know of is a small hand drill with cut gears so it will run smooth. The higher it is geared the better. Such a drill will cost about \$1.00; and when one is used to running it he can fairly punch the bit through a  $\frac{1}{2}$ -inch piece of hard wood, to say nothing of soft. But we must have some way of getting the holes at the right place without too much time lost. Now, I don't believe in finding fault with other people's way of doing things unless we have something better to offer or suggest, so I will submit my way of piercing frame-end bars.



As before, the drawing shows the construction of the holder or clamp. The iron strap contains the holes at the right distance apart. The space between this iron strap and the

block is slightly more than the thickness of two end-bars. These end-bars are held tight while being drilled by means of the lever, which crowds the wedge over solid. The machine may be screwed to a bench-post, or be held in a vise. In either case it must be solid. Now we will take a hand drill, stick the point of the bit in one of the holes in the gauge-iron C, start the crank, and punch your hole as if it were more like punching it through than boring it. Treat each gauge of hole the same, then shove the lever to either side, lift out the two bars, drop in two more, bring up the lever, proceed as before, and be surprised how quickly it is done.

Bairdstown, O., Feb. 26.

### WHAT DO WE REQUIRE IN A BEE?

An Interesting Review of the Differences in Bees; a Plea for a Standard of Perfection, and for More Systematic Breeding.

BY R. F. HOLTERMANN.

Probably in almost every line of live stock found in the class of domestic animals we have ideals mapped out, and then an effort made to breed to that type. In this way we have some, if not all, of our most famous breeds in cattle and sheep. In bees we have not so far been able to control the drone parentage; or if it has been done, as some think, it has not been recognized to any extent. That such control can be secured I believe, but this is a matter which, in my estimation, the governments of our countries should take up, as the work is too expensive for the individual bee-keeper to undertake; and if undertaken, and success attained, others would share the fruit of his thought, labors, and expense. But with all our uncertainty in the direction of controlling the selection of males, when the importance of breeding is more fully recognized, and we can agree and keep before us a definite type, then some breeder will undertake to locate in a section where he will be isolated, say on an open prairie or the like. Or extensive honey-producers will club together or pool their orders so as to control the stock from which their breeder shall propagate.

But have we ever agreed on a definite type which we may practically desire? and if not, how shall we find out with the least trouble if the bee possesses these qualities? Beauty of the bee has been considered, as well as gentleness and tongue reach; but the few who have done this have worked in a more or less disconnected way. There is much more to do, and the need for a more general awakening as to even these points is plainly evident. It is generally admitted that bees vary greatly, for the reason that colonies apparently similar so far as bees are concerned give vastly different results in gathering honey. Can we, by tests, get more accurate information as to what traits shall be kept for breeding, and what weeded out?

One in my own country, and of my own country, recently made the assertion that, if the black bees had been selected as carefully as some other varieties they would have made as good a showing. I do not think that this gentleman claimed to have much practical knowledge of bees or of work in the apiary, for I think that, when one country is taken with another, and time is considered, the black bee has had quite as good a chance to acquit itself with credit as any other variety.

There is no use in beginning with any thing less than the best strains of the best varieties. I do not breed queens for sale, but I have bought hundreds of them, and have even bought from the Arctic Circle.

Bees vary in size much more than the average bee-keeper thinks without actually measuring by scale. I feel sure that I have bees which individually vary in weight thirty-five per cent. We might naturally expect that the larger bee would not only gather the larger load, but would have the strength to press more deeply into the blossoms. We might also hope that it would have a longer tongue reach.

These matters should be the subject of careful tests and experimental work.

Again, bees vary as much constitutionally as do the individuals in other animal families. Some are stronger than others, and can naturally stand more hardship than others.

We have heard that changing the queen appears to check certain diseases. We have heard of starved brood and the death of this in the cell, and in this connection I owe Mr. Wm. McEvoy, inspector of apiaries, thanks for drawing my attention to the great difference in the way in which one colony feeds the larvae. But I think that certain varieties of bees and strains in them have constitutional weaknesses which tend to earlier death than others.

There is a good deal of dead brood complained of that is not diseased. I have seen some of this in my own colonies, and much of it in the apiaries of others, and I have yet to see any of this form of dead brood in what I call the better strains or varieties of bees. For years I have sought to find it in Carniolan or Italian bees, but failed. It is always found in those strains in which black largely predominates. I know of more than one bee-keeper now who is changing the strain of bees to do away with this, and in one case at least doing it after observing this feature in my apiary. I do not say that these varieties of bees prevent foul brood; but if a strain of bee is more strongly constituted it can resist more unfavorable conditions, just as a strong or healthy person can throw off tubercular germs or other infectious disease when a more feeble person can not. It may be that certain strains of bees are more immune to the disease known as foul brood. Such a strain, too, should winter better, and withstand cold winds in spring and live longer. Longevity is a strong point. It takes three weeks of care, attention, nursing,

comb room, and food to produce a bee, be she feebly constituted or robust. If the life-time of a bee is, in the active season, six or eight weeks, and we can have a bee which will live under the same conditions two weeks longer than another, which, from my observations I believe we can, then we have in this point alone a great difference in the amount of honey two colonies can gather under the same conditions.

Some colonies, without robbing, will continue to gather surplus when others are getting no more than is sufficient for their own requirements. I have noticed this particularly at the latter end of a flow. Colonies that appeared to do alike during a good flow would vary greatly in a poor flow. Probable reasons may be given; but how few recognize even the *fact!* Then it is markedly the case, that one colony will be bringing in light honey when the other is bringing in dark. In a general way I have noticed this difference between blacks and Italians. Some bees stop breeding almost the moment the honey-flow ceases. Such bees in many districts are difficult to build up in the early part of the season. Others go to the extreme of breeding too long after the flow ceases. The one trait is about as objectionable as the other. Some bees are easily irritated, and a continual annoyance when handled. Some are made so by improper handling. There was a time when I thought such a bee might have other favorable traits which could not be secured separate from natural irritability; but after more than 25 years' experience I know that such is not the case.

It is well known that some bees are more inclined to swarm than others. We can control this to a greater extent than formerly; but it is a dangerous trait for the average bee-keeper to deal with, and this trait must, with all our modern improvements, be a leading consideration in selection. I have colonies of bees which are of about the same spring strength, side by side in the same apiary. Some breed up faster, of course consume more honey in breeding, yet they actually have more surplus honey right along, and therefore do much better work. But too large a percentage, if in the least neglected, for room or ventilation, swarm or get the swarming impulse. Bees should be weighed full and empty, and their loads compared. Efforts should be made to compare the time they take to load. The degree and duration of cold to which they can be subjected, and yet survive, should be tested. The way in which they guard and defend their hive is important.

In some strains or varieties of bees we find frequently the work of the moth larva, while others rarely have such.

The degree to which bees ripen honey under apparently similar conditions appears to vary. J. H. Shaver, Cainsville, Ont., first drew my attention to this. The variation in capping is well known, and important, as is also, to a less degree, the amount of propolis they gather. Take it all in all (and I have enumerated only a few points), there is a

large and useful field right here which, in my estimation, experiment stations can best invade and cultivate. Let us, upon these and other points along the same line, set ourselves to thinking seriously, and good to the industry is bound to result.

Brantford, Ont.

### THE SWARMING QUESTION.

Dr. Miller's Advice to a Correspondent who Wishes to Start an Out-apriary.

BY DR. C. C. MILLER.

A Mississippi correspondent wants to move his 75 or 100 colonies seven miles out in the country, to better pasturage, and says:

"I want to run altogether for comb honey, and all I want help for is to *hive the swarms* and look after bees occasionally at all seasons—I mean just to see that they are there all right, and set up an alighting-board, etc., that might get out of place. Tell me how to do. Is it best to try to place the bees at some farmer's house and get him to *hive the swarms* and look after bees, I keeping hives always ready, or get some one to stay with bees at whatever price I can during honey-flow? What remuneration and customary pay in each case? and which is the better way?"

I take it that you mean to visit the bees often enough, and attend to their management except hiving swarms and a little general seeing that things are kept in place. In the first place, let me advise you to do some thinking over the question whether it will not be best for you to take matters into your own hands and have no natural swarming. I know it looks like a bigger job than you want to undertake; you've always let the bees swarm naturally, know just how to run things in that way, and hesitate lest you might not make a success in any other way. Yet after you've tried it you may not find it so difficult as you suppose. At least, try part of the colonies by shaking swarms a little in advance of their own swarming, and you will find that the forces can be kept together better than by allowing the bees to have their own way, and you'll be likely to get more honey. Look carefully over the series of articles in GLEANINGS last summer and fall, by Mr. Doolittle, and see whether he has not been planning for just such men as you. Another item in the case naturally appeals to you. You say you have a strong love for the business, and your love for it will be no little enhanced if you feel that you are running the bees, and not the bees running you, as they do to an extent in natural swarming.

But while giving you time to think it over I'll answer as well as I can the questions you have asked. No matter what your plan, better locate the bees with some farmer who will have a friendly interest, you increasing that interest by liberal presents of honey or otherwise. If size of hives, character of bees, and condition of pasturage, are such that very little swarming is to be anticipated, then

the best plan will be to arrange with the farmer to have some member or members of the family watch for swarms, and allow half a dollar to a dollar for every swarm hived. But be sure in any case to have each swarm placed on the stand of the mother colony, the mother close beside it, and a week later the mother moved to a new stand. That will make the swarm strong for section work, and be pretty sure to prevent second swarms.

The likelihood, however, is that, in running for comb honey, and leaving colonies to swarm naturally, there will be so many swarms that the better way will be to hire a hand for the swarming season to make a business of watching for swarms and hiving them—either a member of the farmer's family or some one else—and for such service you ought to pay what would be a fair price for day labor of the ordinary kind. It will be lighter work than an ordinary day's work, because swarming doesn't usually last more than half the hours of a day's work, and the watching part is not very severe labor; but you should have some one thoroughly faithful, and that faithfulness has a money worth to you.

Now, I'm not sure whether I've met the case exactly; but I take comfort in the thought that I'm not likely to mislead very much, for the keen eyes of the editor and others will scan carefully what I have said, and make any needed corrections. Moreover, if I've failed to give light upon any point upon which you desire light, ask again and I will tell you as far as I know.

Marengo, Ill.



That Jay is a jay indeed; but if I were in his place I should want to shave—see p. 1567.

Dr. Phillips seems to be the right man for the place he occupies, and is doing good work. He gave me no little assistance in securing such information as I sought.

The wire cage for keeping bees in their hives in winter seems to be a step in advance of former methods, worthy of the careful consideration of bee-keepers, especially in the North, and perhaps middle sections of our country.

I was surprised, in looking over the markets in New York a few days ago, to see how the tall sections have gained on the  $4\frac{1}{4}$  by  $4\frac{1}{4}$  style in the past six or eight years. Fully one-half or more of the honey I saw in the market was in tall sections, I think.

I found light Cuban honey selling at 16 cts., and here in the city of Washington I find it selling at retail for 20 cts.; yet it seems doubtful if it ever comes into competition, to any extent, with our northern honey, as it does not come on to the market till late in the season, after all or most of our white honey has been disposed of.

I did not mean to say that soil is responsible for all the failures of flowers to yield honey. We know the weather has much to do with it, also climatic conditions, of which we know but little. I wish we knew more. Here in Washington, where Washington's birthday finds me, I am told that clover rarely yields much honey.

I was informed in New York that the trade in "compound" honey was very dull, as it was quite uncertain how the new law would affect such goods. I saw enough, however, to lead me to believe that the business of adulteration will not die without a struggle. Yet here in Washington I found the chemists busy in preparing to meet not only present adulterations but those likely to be practiced in the future.

J. A. Green tells how he had some sections where the cappings were colored by lamp-black. During the past season I had a large number of sections ruined where they were covered by enameled cloth by the bees gnawing through the cloth and using the bits of cloth and black enamel for coating the cappings, and I have begun to wonder if there were not something better to use for this purpose.

Dr. Miller suggests the value of honey for fattening cattle, and Mr. Boomhower has proved its value for swine. My son was recently visiting up in Maine where the gentleman with whom he was staying told him how he was using up his poor honey by feeding it to his horse; while at our house (honey-house, I mean), when bottling honey, if any gets spilled on the floor we have a dog that is always ready to remove it very quickly. Surely the outlets for honey are increasing.

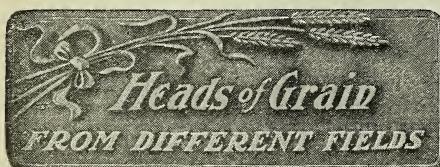
By the way, I wish all the bee-keepers, farmers, fruit-growers, stockmen, and all others who follow agricultural pursuits, could know what the government is doing for them. Already the Agricultural Department is one of the most important of the government. The white marble walls of a new building are now rising for the use of this department, which will, when completed, cost some \$5,000,000; yet it seems doubtful if even this great building will hold all the different bureaus and divisions of this department.

It would be interesting if one could write up all the government is doing for the people, but it would require a volume, and then

the half would not be told. The new pure-food law is going to add immensely to the work of the Department of Agriculture, but I believe there are few bee-keepers who will object. I believe this law alone will do as much for us as any thing that has been attempted by the government. By the way, Mr. Editor, you can add to the list of States that have pure-food laws, given on page 161, that of New Hampshire; and Massachusetts, I believe, is also in line.

As I was riding down Ninth St., Washington, the other day, in a street-car, I overheard a gentleman talking to his neighbor about bees. At once I was much interested, saying to myself that at last surely the people are becoming interested in bees when they talk about them on the cars. He said that his uncle's family had moved out into the country, and his sons had taken up the specialty he preferred. One raised vegetables, another gave his attention to poultry, while a third turned to bee-keeping as more pleasing to him. He said this bee-keeper had already fifty hives of bees, and each hive contained "a million and a half of these industrious insects," and his friend remarked that "*nature was wonderful.*"

A large entrance in summer, suggested by E. R. Root, is worthy of our attention. I purchased a yard of forty hives of bees last spring. The hives were mostly for eleven Langstroth frames, and yet the largest entrances that could be given, a part of them for summer, were about five inches long by  $\frac{3}{8}$  inch high, while he used a winter entrance about 2 inches by  $\frac{1}{2}$  inch high, wintering out of doors in chaff-packed hives. I found some of the combs in these hives had melted down and were in bad shape; and I am of the impression the former owner had not been able to secure much surplus honey, and I was not surprised at the small amount of ventilation given. The winter entrance, small as it was, was undoubtedly all right, as I do not remember to have ever seen a lot of bees as strong on the 1st of June as those bees were.



#### WAX - PRODUCTION; FEEDING BACK THE HONEY.

*Mr. W. K. Morrison:*—I am always interested in your articles, but I am going to ask you to go a little more into particulars than you did in your last article in GLEANINGS on wax-production. You tell us not to use five,

six, or seven frames in the super. Just how many do you find best? and relative to bleaching wax, do you leave it in the sun? My honey is always thick. How much water would you use to a gallon of honey in feeding back? At what stage do you cut the comb out? Do you let them fill the frame to the bottom-bar? My bees begin to put in honey as soon as the wax is the size of your hand.

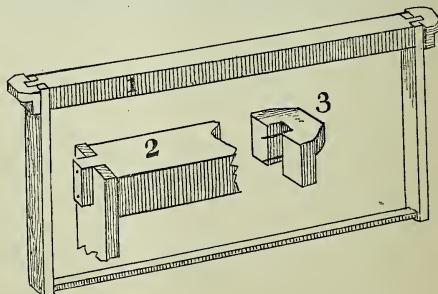
R. M. SWAIN.  
Cibola, Ariz., Jan. 7.

[For several reasons I prefer thin combs, ten frames to the super, and eleven is all right. They are very much sooner capped over and finished. Running your wax once through a solar machine ought to bleach it enough for any market. Thick nice honey ought to sell, even in Arizona; but if you are really compelled to "feed back," one pint of water to one pound of honey will be all right in your country; but you will have to use a shallow brood-chamber in "feeding back;" for if you don't, three-fourths of the honey will be wasted. A brood-chamber 5 $\frac{1}{2}$  inches wide is deep enough for this purpose. If the bees start to fill a comb I let them finish it. When the brood-chamber is composed of combs having none but worker-cells, the bees build drone-combs quite frequently, in which nothing is deposited. This takes place at swarming time generally, or when nectar comes in slowly.—W. K. M.]

#### A NEW SELF-SPACING FRAME.

As there seems to be a lull in the topic of frames just at present, perhaps it is a good time for me to add my mite to the mass of wisdom we now possess concerning the subject. Perhaps I better admit right here that I am a crank of the crankiest kind, and that comb-frames have been a hobby with me for nearly thirty years.

We always look with suspicion on new ideas, and we often turn down a novelty before we see all there is in it; so please look



at the little odd-shaped block attached to the corner of the frame while I tell you a little about it.

Please notice that it has thirteen plain surfaces (unlucky number, I know), but for all that it is easily and quickly made, and when attached to the frame it takes the place of three separate devices in the ordinary frame—a projection by which it is suspended in

the hive, a means by which the frames are properly spaced, and also to locate the frames lengthwise in the hive.

They also, by their impact with each other endwise, form a continuous barrier, thereby protecting the rabbits from any accumulation of propolis or bee-glue. In fact, they are in position a closed-end frame in manipulation, a loose hanging frame with no metal parts to dull the honey-knife. They also afford a wide strong hold for the fingers when shaking the combs, and then see what a good grip for the thumb and finger when you wish to carry a heavy comb in one hand. Frames made in this way can be very strongly nailed, with no tendency to twist, and are sure to hang perpendicularly in the hive.

South Cabot, Vt.

D. S. HALL.

#### THE PREFERENCE FOR 4×5 SECTIONS.

One week ago I took off three supers of white clover in 4×5×1½ sections; one super in 4½×1½ sections, all nicely filled and capped. All were put into the same show-case in my store, and marked 18 cts. To-day it is nearly all sold; but the trade all pick out the 4×5×1½ sections. Why? The sections that are left are all good. I think the customers who consume these will settle this section question with me. In 1894 I used all 4½×1½; 1895, half 4½×1½, and half were 4×5; 1896, 24 supers 4×5, and 3 4½×1½.

Bradshaw, Neb.

C. B. PALMER.

#### HONEY FROM ALFALFA.

I noticed the question, "Does alfalfa yield honey in Texas?" page 1565. It does in Nebraska; but the most of it comes from that grown on light warm soil with a medium stand. Rich clammy soils and a thick heavy stand yield less. Why? The nearer the ground the better the flow. Cold damp pastures and the honey-bee don't mix. If you want to find bees on alfalfa, use the mower when the blossom is about one to two weeks old. Don't go in where you have poured water a short time before, nor into damp low ground after a rain, unless the weather is very warm; and don't look near the bee-yard. Go to the far side of your field, if not over a mile; and if you don't find bees flying out as you go through, examine your cutter-bar and sickle; and if there are no cripples or dead bees on them, then make up your mind that Texas alfalfa does not yield honey.

F. E. STARKEY.

Boelus, Neb., Dec. 31.

#### QUEEN-EXCLUDERS; SLOTS TOO SMALL; WIRE-CLOTH SEPARATORS.

On page 107 G. C. Greiner discusses excluder openings; and as you call for reports I briefly send the following:

Last spring I ordered 25 full-sheet excluders, the first I ever used, of the latest pattern; and upon testing them I found that my Carniolans had to struggle to get through; and at the close of the season I found a number quite badly clogged with dead bees.

However, before using all I filed off the rough burr edge and slightly enlarged the opening of several sheets; and, while not an interesting job, I expect to treat the rest in that manner. I had previously met with no little annoyance in consequence of finding brood in comb-honey supers; and to obviate that difficulty I ordered the excluders.

Cobleskill, N. Y.

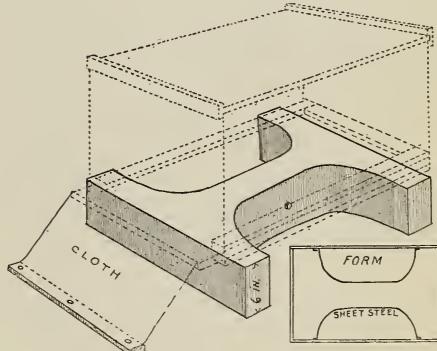
S. A. B.

[See editorial on this subject in our issue for March 1, page 310.—ED.]

#### CEMENT HIVE-FOUNDATIONS; ALIGHTING-BOARDS MADE OF CLOTH.

The drawing shows my cement hive-stand and cloth alighting-apron attached to the bottom-board, which I intend to use in my apiary next season. The hive-stand should be about six inches high, and two inches shorter and at least two inches wider than the hive. The ends of the hive-bottoms should never rest on the foundation, as it will have a tendency to keep the bottom of the hive damp, and thus be injurious, both to the bees and the hive.

The walls of the hive-stand should be about three inches thick. A knock-down box held together with clamps can be used as a form for making the stand. Sheet steel properly bent should be nailed on inside of the box sides to give the stand the desired form.



CHAPPELL'S CEMENT FOUNDATION AND CLOTH ALIGHTING-BOARD.

The alighting-apron should be about 18 inches long and as wide as the hive, and can be made of old sacks or new factory cloth. If the latter is used I would give them a coat of white paint, as it would make them last longer.

The advantages of the cloth over a hard board for the bees to strike on when coming in loaded will be seen at a glance. The apron makes a nice runway for a returning swarm if using clipped queens, and is also a nice thing to dump a swarm on if natural swarming is allowed. Another advantage is that the apron is always hitched to the bottom-board ready to use, and can be carried with the hive. I have always used a loose board for the bees to alight on, but it was always trying to get a "divorce" from the

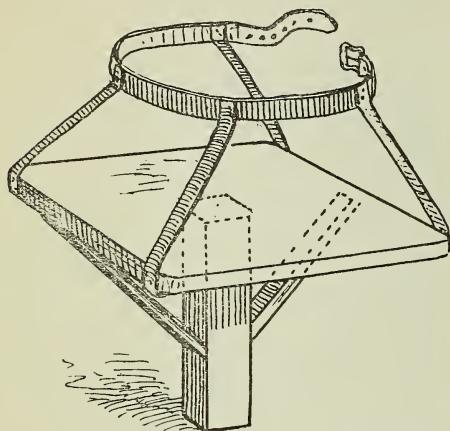
hive, and never satisfactory. A piece of wood heavy enough to hold the apron in place should be nailed to the lower end of the same.

R. D. CHAPPELL.

Vassar, Mich.

#### A CONVENIENT SEAT.

Here is a description of a tool to be used when you are looking through your apiary. If you try it you will find it a time-saver. It



beats sitting on lids or toes. It's just an ordinary milking-stool strapped to the waist. It is made as shown in cut.

Los Olivos, Cal. M. D. WHITCHER.



[Our artist could not resist sending the drawing, which is here reproduced.—ED.]

#### A QUEEN STINGS A WORKER.

I read with great interest Jay Smith's article, page 1192, 1906, headed, "Do bees sting queens?" I say yes. I also say queens sting bees. Last summer, during the queen-rearing season, a neighbor a few miles away gave me an order for four queens, and wanted me to come and introduce them. I had laid one of these cages down, wire cloth up, while I opened the hive to look for the queen; and when I picked the cage up I noticed a black worker on the outside of the cage, from some one of the colonies in the yard, for they were all pure blacks. The Italian queens were fighting through the wire cloth, and they were both stinging too. I watched to see the end, and it was very interesting to me. The end was that the queen stung the outside worker bee to death, the queen being pretty badly stung in one hind leg. I then

went ahead with the introducing part. I do not know whether she ever recovered or not. I suppose she did, as I told the man if she died I would replace her.

Ravenswood, W. Va. T. L. McMURRAY.

#### FALL HONEY CANDYING IN HIVES BEFORE SPRING; SUMAC AS A HONEY-PLANT; SOURCE OF GREEN HONEY.

On page 1375, Nov. 1, Grant Stanley says his bees get their winter stores in September and October. If his bees get their honey then from asters and goldenrod, as mine do here, next spring his hives would have most of the combs filled with honey candied solid, and he would have to shave them down to the base of the cells to get it out of them. He must save July honey for winter, and extract fall honey.

Page 1377, Nov. 1, G. A. Stone wants to know what green honey comes from. Sumac yields it here. Get the light to strike it right when running from the extractor and it is as green as a leaf. In clear glass it has a green shade. It is as light as white clover, and next to it in flavor. I think it the best honey-yielder in this part of the country. I think it never fails entirely. I have taken it by the ton when the basswoods were full of blossoms, and I thought sure I should have basswood honey. When I extracted I could not taste basswood, but the sumac was there every time. The sumac is better than basswood, so I don't worry about it.

New Hampton, N. Y. E. D. HOWELL.

#### RATS AND MICE; POISONING THEM WITH STRYCHNINE.

Put a quantity of dry flour in a shallow dish or pan, and crumb a quantity of strychnine into it. I usually pulverize the poison between my thumb and finger. I consider this method of poisoning safer than putting it on some bread or meat, as nothing will eat the dry flour but mice and rats, and they seem to be very fond of it. The drowning method given will not work in the winter season unless you put the kettle and water in a warm place, as it will freeze.

Filion, Mich., Jan. 14. I. S. TILT.

[We thought when we first got hold of "rat biscuit" it was going to do the business, but either the rats have learned what it is or it is not so well made as at first; for lately they don't touch it at all. If they will continue to eat the flour after strychnine has been added, it will be a great boon. Of course, every one who handles such a deadly poison will exercise the greatest care.—A. I. R.]

#### COOKED POLLEN FOOD.

Have you any publications or reports of anything that has been done in any way of experiments in the line of cooked food for bees, perhaps to take the place of pollen, in winter, or for other ends in view? I notice at times some of the bees seem to eat almost any thing liquid, and I wonder if any thing

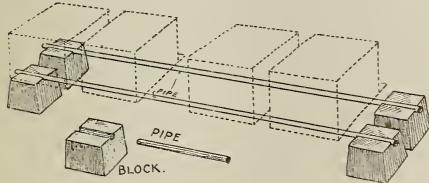
has been done along that line. I don't know that there would be any thing gained or lost by such experiments.

W. B. BURLINGAME.  
Exeter, N. H., Nov. 14, 1906.

[This subject has been fairly well studied in Germany, where quite a number of compounds are made by bee-supply houses, and sold to bee-keepers generally. Dr. Dzierzon highly recommended some of them. The best compound is said to be a paste composed of invert sugar, pea flour, and white of eggs in certain proportions. This, if fed in spring, is supposed to stimulate greatly the secretion of chyle food by the workers who have to feed the queen and the larvae. Perhaps the most celebrated of these manufactured foods is that of Dr. Follenius, in Hamburg, or Karl Glorius, in Leipzig-Schonau.—ED.]

#### A SUPPORT FOR A ROW OF HIVES MADE OF CEMENT BLOCKS AND IRON PIPES.

I send a rude sketch of a cement block, such as my few hives are resting on. The groove in the top is for the reception of an iron pipe. The pipes are 20 feet long and supported by four such blocks each. The



blocks are 8 to 10 inches high, and are arranged in two rows like a railroad. Such blocks and pipes have at least the merit of durability, of which the hives also partake.

Chuluota, Fla. J. A. BARBER.

#### THE ALEXANDER PLAN FOR BUILDING UP WEAK COLONIES; A SLIDE TO PREVENT THE INTERMINGLING OF THE COLONIES FOR TWO DAYS.

I had a very weak colony last spring. I went to a strong one and took every thing from the top of the hive down to the brood-frames. Over them I laid a queen-excluding honey-board, and over that a wire cloth. I then cut out a piece of wire cloth, 3×6 in., from the back end, then over these I fitted a piece of thin tin, extending back an inch beyond the hive. I then took the weak colony (bottom-board off), and set them on the strong colony for two days. I then drew the piece of tin back a very little, admitting few bees at a time. After two more days I withdrew the tin entirely, then after one week more I peeled off the wire cloth. When the colonies became equal I separated them, setting them each side of the old stand, watched them a little while, and every thing was lovely.

My bees had been flying for several days before my experiment. E. MCNETT.

Lewis Center, Ohio, Oct. 23, 1906.

#### THE ALEXANDER PLAN FOR WEAK COLONIES A SUCCESS.

I bought 31 stands of bees in old hives, nearly all of them weak, and transferred them into ten-frame hives on April 10. I had eight weak colonies of from one pint to one quart of bees in each, and I put these eight colonies on eight colonies of the same lot that had about two quarts of bees in each. I lost only two colonies out of the sixteen, and I fed them in the Doolittle feeder in the top of the hive with young queens from Texas. I claim the plan is a success.

Boonville, Ind. LEONARD ECKSTEIN.

#### THE ALEXANDER PLAN OF BUILDING UP WEAK COLONIES; FIVE COLONIES LOST.

I find something good in every number of GLEANINGS; but the Alexander plan of building up weak colonies was a sticker. I lost every one of five so treated, but will try it again. Next time I'll use a wire screen between the two colonies at first for a short time.

E. H. BEARDSLEY.

Chicago, Ill.

#### STICKY FLY-PAPER TO CATCH ROACHES.

On page 97, in reply to Miss Wood's request I will say if she will use fly-paper—the Tanglefoot, or some good kind—by placing the sheet on mattings or between open covers, or tack a strip around the hive next to the cover, except in front of the hive, it will catch the roaches, bugs, etc. But care must be taken that Miss Bee can not get on the matting. Half-inch strips on the outside will do; but I prefer the inside when used between the cover. A thin strip of wood can be used to keep out the bees, and leave room enough for the roaches to crawl in. The roach will eat honey, but I can't say how much they can eat; but let it be little or much it takes that much from the bees.

When a moth-miller goes on top in the cover it is a goner. J. W. PATTEN.

Holden, Mo., Jan. 28.

#### CHICK PEAS.

Would you kindly favor a subscriber by telling him where he can obtain chick peas, as suggested, good for sowing on behalf of bees? Do you think they can be sown in Minnesota?

R. G. FISHER.

Lakeland, Minn.

[Large quantities of these peas (garbanzos) are shipped from Sonora, Mexico, over the Southern Pacific Ry. to New Orleans. Perhaps one of our subscribers in that region could supply our friend.—W. K. M.]

#### KANSAS STATE CONVENTION.

The fourth annual meeting of the Kansas State Bee-keepers' Association was held in the parlors of the National Hotel, at Topeka, Dec. 27, 28. While the attendance was not large, it was nevertheless the best and most interesting meeting ever held by the Association. Mr. C. P. Dadant, of Illinois, was pres-

ent, and read a paper on the pollination of fruit by bees. An effort will be made to have the present foul-brood law amended during this session of the legislature. The meeting will be held at Hutchinson, during the State fair, in September. The meetings closed with a banquet on the evening of the 28th.

The following officers were reelected: President, Dr. G. Bohrer, Lyons; Vice-president, E. W. Dunham, Topeka; Secretary and Treasurer, O. A. Keene, Topeka.

Topeka, Kan., Jan. 13. O. A. KEENE.

#### HOW TO STOP A SWARM OF BEES.

Please state all of the methods you know on how to stop a swarm which you can see going across the country.

Bluffton, Ind. C. H. SUDDUTH.

[There is no way to stop a swarm of bees while in flight except by means of a spray-pump and a pail of water. With this you can drive them back, and actually force them to alight. But the water must be applied before they start for the woods. If you can get in front of them before they get started, with the spray you can stop them and confuse them, and finally make them turn back or alight on the nearest bush or tree.—ED.]

#### BEES AND RED PEPPER.

There are a great many dogs around my home that dig up the flower-beds. To prevent their doing this, mother sprinkled red pepper over the places where the seeds were planted. She did it early in the morning, and when I returned from school at half-past three the ground where the pepper lay was covered with honey-bees. It was early in the spring, and I had not then seen any bees around. I should like to know why the bees came after the pepper.

Swarthmore, Pa. ALICE P. GARWOOD.

[The above question was sent to Dr. E. F. Bigelow, editor of the Nature and Science department of *St. Nicholas Magazine*, and he has asked that it be answered by the readers of *GLEANINGS*. We have never heard of a case of this kind before, and can account for it only on the basis that the bees are attracted by pungent odors. The red pepper falling on the ground probably became moistened, with the result that it gave off an odor which, with their delicate organs of scent, the bees readily detected. That they were appropriating any moisture from the pepper is doubtful. Mr. Morrison states that in localities where pepper is grown, the bees can be seen gathering it as a substitute for pollen.—ED.]

#### QUEEN STUNG BUT NOT KILLED.

I had a queen stung last year right at the butt of the wing, and she lived. I waited to see if she would die, but she did not.

CHAS. WARNER.

Wait, Ohio, Sept. 19, 1906.

#### HOW TO GET RID OF ANTS.

When our bees are troubled by the ants we put the colonies on benches, the legs of which rest in cans containing a little turpentine. After this is done there is no further trouble.

EDMUND ULRICH.

Steinauer, Neb., Feb. 15.

#### SHALLOW HIVES IN AUSTRALIA.

We take the following from the *Commonwealth Bee-keeper*, Melbourne, Victoria:

I contend that more honey can be extracted from these shallow frames than from deep ones. I mean that they can be handled more quickly. (I fancy I hear some of our readers say, "Nonsense! Fancy running an apiary of, say, 400 colonies with those pesky little frames".) Why, Mr. Editor, in the last red-gum flow, I took off 43 60-lb. tins in eight hours, without an assistant, one man uncapping and one at the extractor, three in all. Besides taking off, brood-nests were examined, as was usual; old black queens beheaded; weakish hives given brood from strong ones, etc. I mean to say that there was no effort made to form a record. I doubt, sir, if this could be accomplished with the deep frames under similar conditions. If you wish, I could tell some greater virtues of the hive concerning the swarming part. There was some comment in last issue upon a six-tin average, 360 lbs.; some seem to think it nearly impossible. I know for certain that one man in the Western District got 19 tons from 192 colonies, almost all from a red-gum flow. I think it would have pulled the six-tin average if the yellow box had been a success. Get your colonies strong, suppress swarms by the shallow-hive method, give them your whole attention, and, if Providence is good enough to give us a fair amount of nectar in blossom, then our task is easy to accomplish the six-tin average. The ton was 2240 lbs.

#### ARE THE ORDINARY WHITE SUGARS OF COMMERCE WHOLESOME, AND FREE FROM DELETERIOUS SUBSTANCES?

We have already published two or three items to the effect that the white granulated and loaf sugars on the market have been bleached by chemicals that not only abstract some of the goodness of the sugar, but leave a residue which can not be entirely eliminated, and which is more or less harmful. In the Alabama *Times* appears the following item, entitled "Sugar under the New Law."

*Washington*, Jan. 29.—Southern sugar-refiners are very desirous of having the Department of Agriculture make a ruling as to the manufacture of sugar under the new food law, and a delegation is in the city for that purpose. For a hundred years it has been the practice to bleach sugar with bluing. Years ago indigo was used to give the sugar brilliancy, but of recent years aniline dyes have been employed. Another method of refining sugar is by the use of sulphur fumes. It is said that, under the pure-food law, unless the Department of Agriculture makes a ruling to the contrary, the use of aniline dyes and sulphur fumes will both be prohibited, and probably the use of indigo, so that the refiners will have to return to primitive methods. In fact, it is said by the cane-sugar refiners that there is a chance that white sugar will be eliminated altogether. The refiners and producers of sugar want a ruling before the appropriation is made for enforcing the law.

Better have the white sugars "eliminated altogether" if they contain harmful substances. Better by far that we go back to "primitive methods" and get a natural sugar without any harmful chemicals in it. Hasten the day when we may get a cheaper and better sugar. We hope the Agricultural Department will not let up one inch.—ED.



Even as a hen gathereth her chickens under her wings.—MATT. 23:37.

Our Lord and Savior, in that wonderful verse, a part only of which I have quoted, recognized the intense and unselfish devotion of the mother hen for her chickens. Just now it is not my purpose to discuss the great moral truth in that verse, but only to consider the illustration; and it is not so much the mother hen I wish to talk about as it is the chickens—the “motherless” chickens, in fact, that come from an incubator.

My first hatch, as I have told you, was given a hen to “brood,” and I am glad to tell you she did her part so well that not one of the thirty was lost. They are now weaned and feathered out, and only yesterday I was wondering what great birds they were that were clear up in the tops of the palmetto and live-oak trees. Sure enough, they were my thirty “Florida flying-machines.” They had climbed into the trees, and, for sheer pastime, were seeing who could fly the furthest, and they went sailing away off across the lot. Well, there was no sitting hen for the next lot, so I put them in the brooder under the incubator, and they got killed from the oil by rubbing against the lamp to keep warm, as I have told you. I succeeded in saving two only, and these came so near death I had given up all hope. The skin came off in great patches, taking the feathers too; but when I saw nature was fast making new skin, and feathers too, I took hope, and now they too are pretty fair flying-machines, even if they are a sorry pair to look at. I washed them with Castile soap and water, put on cuticura, and now they flop their new pearly-white wings and give me thanks every time I come in sight.

#### ARE BROODERS NEEDED HERE IN THIS FLORIDA CLIMATE?

I have not yet fully settled the question, but I feel sure a very cheap form of brooder will do nicely. After the coal-oil mishap I put my chicks, as they came from the incubator, in a light thin pine box, lined inside with burlap, and set it on top of the incubator. The top of my incubator, being metal, is always quite warm, and the chicks in my box kept over night nicely. In the morning, box and all was placed out in the sunshine. We always have sunshine here. As the strongest chicks were soon out by daylight, some of the weaker ones needed a little warmth before the sun got well up. I fixed this nicely with a hot flat-iron placed bottom up under the pine box. By the time the iron was cool the sun was up and no more heat was needed. I used the flat-iron only

three or four cool mornings during the first week.\* Some of you may say this is more trouble than to have a regular brooder. Well, I proposed to try one of the best up-to-date incubators and brooders; but after I had deposited the cash for incubator by *fast express* (and brooder by freight) the first communication I could possibly get from them was a *printed postal card, 16 days later*, saying my order was “entered,” etc. I then countermanded the whole order, and that is why I am not only keeping poultry absolutely without houses or “coops,” but I am raising beautiful strong chickens *without a brooder*. One important result is, I have yet to see a glimpse of any sort of poultry vermin on the island. My five pullets laid regularly four eggs one day and five the next, until one began sitting, and now we get three eggs one day and four the next, and this has been going on for over thirty days. I use a bone-mill to give them animal food, and the sea-kale that grows abundantly along the beach gives them a great plenty of vegetable food that they are very fond of.

#### SOMETHING MORE ABOUT “BABY CHICKS.”

Through bad management and a cheap incubator (probably mostly the former) my chicks did not get out of the shell very well. I would not at present advise putting eggs in the incubator every day and having “new chicks” every day. It is true, in my “nature studies” it gave me some lessons I might not have gotten otherwise, and it may do all right “just for the fun of the thing.”

When the eggs did not hatch on time I noticed one writer said it helped them along to dip the eggs in water at 105 degrees. Well, I presume I got a little nervous, and failed to notice an egg I was dipping was chipped. As the warm water rushed into the opening you ought to have heard the baby chick protest. Oh how I do wish I could put the pretty little talk in print, used by baby chicks! I have known for years that the mother hen has quite a vocabulary that the chicks recognize and understand; but that the little chick has a whole lot of pretty little speeches that the *mother* understands perfectly is one of my recent “wonderful discoveries.” Together with this talk is a physical and intellectual growth that is positively amazing. These chicks in my pine box had no mother to love (and to love them) except me, and straightway it seemed as if they lavished and *poured out* all that little love and longing on my poor self. Their toes got cold, and they called “Chirp, chirp, chirp.” I warmed them, and they expressed their thanks with that pretty little “Chee, chee, chee.” Instinctively they wanted to follow somebody to exercise their little feet and

\*The burlap was put around the inside of the box double, folded overhead double with the loose end so it could be folded back to leave an opening on the top for air larger or smaller according to the weather. You can tell by their actions when they have about the right amount of air. When rainy, box, chicks, and all were carried inside. The chicks got out and in over the top where we ventilate. I feel sure it is best to get along *here* with as little artificial heat as possible.

wings, and so wherever I went a "retinue" was ahead, behind, and between my feet. When I tried to run away from them it only increased their glee, and the way their tiny feet would spin was a caution. When I went into the house a "delegation" would surround the doorstep awaiting my return. If I was gone too long it was "Chirp, chirp, chirp;" but when I opened the door, there was a flopping of the pearly baby wings and the glad "Chee, chee, chee." When I was potting plants they climbed all over my feet, and I have thought several times I *ought* to tell Mrs. Root there was *somebody* down here in Florida who, in *real truth*, "loved the very ground I walked on."

I told them again and again they would surely get stepped on, but they just laughed as at a joke at the thought that I, who *loved* them, would harm a feather of their little bits of bodies. Sometimes I let them climb up my feet and get on my knees. This is a great treat for them. They crawl up my sleeve, under my vest and coat, get on my shoulder, examine my ears and eyes, meanwhile making a musical little concert of their "Chee, chee, chee." Their sense of hearing is just wonderful. After they have tired of their vigil at the doorstep, they wander off in the garden; but I can see them out of the window, and the moment I move my feet under the table they hear the sound and are back at the doorstep to give me welcome when I come out. Now, it isn't their food, for I keep this by them all the time. I am forced to conclude it is real affection for the one who has won their baby affections and stands in the place of mother and teacher. When I feel I *can't* have them around I have tried to drive them away; but it seems almost hopeless to try to convince them that *I* do not love *them* as devotedly as *they* love *me*. The watering-pot seems to be the best weapon, and it is truly laughable to witness their consternation and protests when I give them a gentle showering to make them go home.

There is one fine large chick that seems to be a sort of leader. When first hatched he was remarkably large and of a golden yellow color; in fact, he seemed a fluffy ball of the softest and finest down. Well, he and I were always particular "chums." I told him over and over again he would get stepped on, but he just bubbled over with fun about it, apparently, until one day when the wind was rather strong and cool I went to fetch a cloth-covered frame used over the greenhouse, to set up as a windbreak for the chicks. All at once I felt my foot on something soft, and, oh dear me! it *was* my pet chicken. His merriment had all stopped, or, rather, changed to a pitiful peep, while he slowly crawled along with his newly feathered pearly little wings dragging on the ground. I cuddled him up in my hands and tried to tell him how sorry I was, and it almost made me cry to hear him try to give me his accustomed "Cheep, cheep," of friendship. He moped about all day, but wouldn't eat or notice any thing; and when I put him

in with the rest at night, I fully expected to find him dead in the morning. I remember wondering if it would be wicked to pray that God might spare the life of a chicken. The next morning he was better, but he didn't eat any until about noon; but by night he seemed his old self again; in fact, he was so full of "frolic" he didn't seem to want to go to bed at all. After I had put him in his box the third time, and it was getting pretty dark, I heard his well-known "Cheep, cheep, cheep," at the doorstep, and I understood by it he meant, "Say! aren't you glad I ain't gone dead?" and I replied as I held him up against my cheek, "Yes, darling, I am *exceedingly* glad, and I thank God that you are alive and well once more in spite of my carelessness."

#### WILD ANIMALS ON THE ISLAND.

Just once we found coon-tracks in the neighborhood, and for fear they might get through the poultry-netting and raid my chickens I told Mr. Shumard I would offer a premium of \$1.00 for a coon dead or alive. Accordingly he set his traps and soon had *five* dead coons, and now there are no more coon-tracks. With a sharp hatchet and a cedar block I chopped them up, bones and all, for the chickens. Well, ever since then if I chop on that block with the hatchet, the chickens, far and near, come rushing in on the double quick. When the dinner-bell rings at Mr. Shumard's, where I board, it is the signal for the little chaps, and they push ahead into the dining-room if the door is not closed quickly. Not only are their sight and hearing wonderfully acute, but they learn tricks and every thing else, when less than a week old, with a readiness that is almost startling. The baby chicks drink from an inverted bottle that holds, may be, a pint. As soon as they saw a similar apparatus in the big yard, that holds about a gallon, they took in what it was for, and rushed up to it to get a drink. Was not that almost reasoning?

#### MOONLIGHT NIGHTS IN FLORIDA.

I have heard it said that, the nearer you approach the equator, the brighter are all the starry constellations of heaven. Well, along the latter part of January we had some very bright moonlight nights. I noticed I could read fair-sized print very easily. At just half-past one, one night, I was surprised to hear sounds among the poultry. It didn't seem like sounds of alarm, and you can imagine my surprise when I heard the rooster calling the hens with his usual "Cut, cut, cut." Sure enough, there he was, calling them to get some corn left over when I fed them the night before, and one of the pullets was singing as merrily as if it were daytime. As nearly as I can make out, the rooster stayed up until morning; but the "females," doubtless recognizing they had made a blunder, discreetly climbed back again to their accustomed perch in the cedar-tree. Has any one ever before seen the chickens fooled by moonlight?

Dear reader, has it occurred to you while reading my long chicken-story, if, indeed, you have had the patience to take it all in, that

there are baby boys and girls in this land of ours who might prove as interesting and as wonderful in their make-up as the baby chickens? Well, this same thought has been in my mind; and may be these "nature studies" that have afforded me so much pleasure may bet-

ter fit me for graver problems than any I have yet encountered.

"Behold the fowls of the air; for they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them. *Are ye not much better than they?*"



## Doing a Week's Washing In 6 Minutes—Read the Proof

**T**HIS woman is using a 1900 Gravity Washer. All she has to do is keep the washer going. A little push starts it one way—a little pull brings it back—the washer does the rest.

The clothes stay still—the water rushes through and around them—and the dirt is taken out.

This machine will wash anything—from lace curtains to carpets, and get them absolutely, spotlessly, specklessly clean.

**T**here isn't anything about a 1900 Gravity Washer to wear out your clothes.

You can wash the finest linens, lawn and lace without breaking a thread.

"Tub rips" and "wash tears" are unknown.

Your clothes last twice as long.

You save time—labor—and money.

You wash quicker—easier—more economically.

**P**rove all this at my expense and risk.

I let you use a 1900 Gravity Washer a full month FREE.

Send for my New Washer Book.

Read particulars of my offer.

Say you are willing to test a 1900 Gravity Washer.

I will send one to any responsible party, freight prepaid.

I can ship promptly at any time—so you get your washer at once.

Take it home and use it a month. Do all your washings with it.

And, if you don't find the machine all I claim—if it doesn't save you time and work—if it doesn't wash your clothes cleaner and better—don't keep it. I agree to refund your decision without any back talk and I will.

If you want to keep the washer—as you surely will when you see how much time, and work, and

money it will save you—you can take plenty of time to pay for it.

Pay so much a week—or so much a month—as suits you best.

Pay for the washer as it saves for you.

I make you this offer because I want you to find out for yourself what a 1900 Gravity Washer will do.

I am willing to trust you, because you can probably get trusted at home. And, if your credit is good in your own town, it is just as good with me.

It takes a big factory—the largest washer factory in the world—to keep up with my orders.

So far as I know, my factory is the only one ever devoted exclusively to making washers.

Over half a million of my washers are in use.

Over half a million pleased women can tell you what my washers will do.

But you don't have to take even their say-so.

You can test a 1900 Gravity Washer yourself. That is all I ask.

Write for my book today. It is FREE.

Your name and address on a post card mailed to me at once, gets you my book by return mail. You are welcome to the book whether you want to buy a washer now or not.

It is a big illustrated book, printed on heavy enameled paper, and has pictures showing exactly how my Washers work.

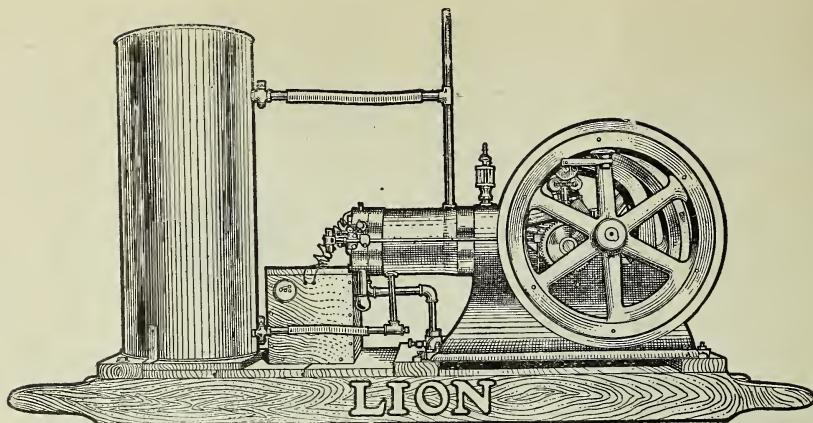
You will be pleased with this book. It is the finest ever I have ever put out. Write me at once.

Find out just how a 1900 Gravity Washer saves your time and strength—preserves your health—and protects your pocketbook.

Write to my Address: R. F. Bieber, Manager.

"1900" Washer Co., Henry St., Binghamton, N. Y. Or, if you live in Canada, write to my

Canadian Branch, 355 Yonge St., Toronto, Ontario.



## IT'S READY TO OPERATE

There's no firing-up—no waiting for steam with a **Lion** Gasoline Engine. It is **always ready to operate**. Easily started—no engineer necessary—a boy can operate it. Can be used with perfect safety in any building and is **very economical** in the use of fuel. If you want a reliable, practical, durable and powerful power producer get

# *The Lion Engine*

It is **not** an experiment but an engine that has **made good** wherever used. On the farm it proves especially valuable for operating feed grinders, wood saws, cream separators, corn shellers, pump, etc. It furnishes ideal power for operating machinery used in mills, shops, printing offices, private electric-light plants and water-works. Speed can be changed from 100 to 600 revolutions per minute while engine is running—a very desirable feature.

We sell **direct from factory to buyer**, thus saving you all middlemen's profit. Lion engines are so simple and practical in construction that with the explicit directions which we send with each engine, it is unnecessary to have an expert come to your place to set it up and start it for you. Get a **Lion** engine and increase your profits with much less labor and time devoted to the work. Write now for catalog giving full information and illustrations of the **Lion** engine. It is free if you mention this paper when you write.

**Ballou Manufacturing Co.,**  
Successors to Lyons Engine Co.  
**Beaumont, Mich.**



## Convention Notices.

The North Texas Bee-keepers' Association will hold its annual meeting at Ladonia, Texas, on the first Wednesday and Thursday in April. All bee-keepers are invited to attend. No hotel bills to pay.

W. H. WHITE, Sec.

The Northern Michigan Bee-keepers' Association will hold its next annual convention at East Jordan, Mich., Wednesday and Thursday, April 10 and 11. Special rates secured at the Russell House, of \$1.00 per day.

IRA D. BARTLETT, Sec.

The annual meeting of the Connecticut Bee-keepers' Association will be held in the State Capitol, Hartford, room 50, April 6, 1907. Interest in bee culture has been given an impetus through the recent effort to secure good foul-brood legislation, and this meeting will not only give every bee-keeper in the State an opportunity to increase his knowledge of bees and their diseases, but an interesting program has been prepared touching many other important phases of the science of apiculture. A cordial invitation is extended to both ladies and gentlemen. Please bring choice samples of honey, or any thing of an aparian nature, for the honey exhibit. J. ARTHUR SMITH, Sec'y.

Hartford, Ct.

*Special Notices  
By Our Business Manager*

"HOME AGAIN."

I expect to leave here for Ohio about March 15. Therefore all matter especially for myself should be sent to Medina, Ohio, after you see this.

Osprey, Florida, Mar. 8.

A. I. Root.

The attention of bee-keepers in the Canadian provinces is directed to the announcement of E. Grainger & Co., Deer Park, Toronto, Ontario, which is found on page 339 of this issue. To avoid the delays so often experienced it is important that bee-keepers living in remote points should send in their specifications to Messrs. Grainger & Co. early in order that goods which are required from the factory may be obtained in ample time for the use intended. So often goods are delayed in the custom-house between the United States and Canada that this makes it the more necessary that Canadian orders be sent early to the dealer who is getting his supplies in the United States.

SECOND-HAND FOUNDATION-MILLS.

We have the following second-hand comb-foundation mills to offer. We give a brief description of each, and shall be pleased to mail a sample of foundation, representing any one or more of these mills, to those interested, on application:

No. 059. 2 $\frac{1}{2}$  x 6-inch hex. extra-thin-super mill in good condition. Price \$12.00.

No. 077. 2x10-inch round-cell brood mill, in old-style frame, in good condition. Price 12.00.

No. 082. 2 $\frac{1}{2}$  x 10 medium-brood mill, round cell, late-style frame, in good condition. Price \$15.00.

No. 083. 2 $\frac{1}{2}$  x 10 medium-brood hex. mill, late-style frame, in good condition. Price \$16.00.

No. 084. 2x10 medium-brood round-cell mill, old-style frame, in fair condition. Price \$11.00.

No. 075. 2x9 hex. brood mill in the oldest-style wood-base frame. Original price of this machine was \$80.00. We offer it for \$10.00.

TOBACCO DUST.

We have to offer two kinds of tobacco dust used as an insecticide and fertilizer on plants in greenhouse work. A fine dust made in part from ground stems we offer at 3 cts. per lb.; 10 lbs. for 20 cts.; 100 lbs.,

\$1.50; by the case of about 300 pounds, at 1 $\frac{1}{4}$  cts. per lb. A better grade, not so fine, will cost 1 cent a pound more than above for a like quantity. Sample mailed on request to those interested.

SEED PRICES ADVANCED.

We find it necessary to revise some prices on seeds from those given in our seed list. Alfalfa seed is advanced to \$10.00 per bushel; \$5.25 per half bushel; \$2.75 per peck; 20 cts. per lb. By mail, 30 cts. per lb.

Crimson clover, \$10.00 per two-bushel sack; \$5.25 per bushel; half bushel, \$2.75; peck, \$1.50; 10 cts. per lb. By mail, 20 cts. per lb.

Cow peas, \$3.00 per bushel; \$1.65 per half bushel; 90 cts. per peck; 1 qt., 15 cts. By mail, quart, 30 cts.

Soja beans, quart, 15 cts.; peck, 90 cts.; bushel, \$3.00.

REMOVAL OF NEW YORK CITY OFFICE.

We have rented new quarters for our New York office, which we will occupy after April 1. We have some stock in our present location which we will sell at a special discount, rather than move it to the new warehouse in Hoboken, N. J. We have 300 ten-frame bodies packed with molded top-bar frames; about 200 Danz. hives packed with gable covers, and sixty dozen one-quart Mason jars. If interested, write to New York address, stating how many you could use, and get best price. Will sell at about 10 per cent off regular prices.

BEESWAX ADVANCED.

We advance our prices on beeswax to 31 cts. cash, 33 cts. trade, for average wax delivered here or at our branch houses. A branch house is one operated in the name of The A. I. Root Co. A general agent handling our goods in car lots is not a branch house; and if you ship to any such, you had better make arrangements beforehand as to what price you are to receive. We can not make prices for such general agents, and you can not hold them to our quotations. We mention this because several have complained to us that they did not receive our advertised quotation when no bargain was made in advance.

**DOVETAILED HIVES,  
SECTIONS, ETC.**

of best quality (JOHN DOLL & SON'S MAKE). EXTRÉ low prices quoted on all supplies. Let me figure on your order. I can save you money. BERRY BASKETS AND BOXES in stock. Send for 32-page catalog free. **W. D. SOPER, Jackson, Mich.**

**\$53,700** Made by O-HI-O Cooker Agents in 1905 Selling the **0-HI-0** COMBINATION STEAM COOKER-BAKER.

We have many agents making \$5 to \$10 daily. Write us and we will give you names of agents near by who are making at least \$5 daily. We can easily prove that the "O-HI-O" is the best money-maker you ever heard of, and will make you more money than anything you ever sold or ever thought of. Write us once and we will prove it.

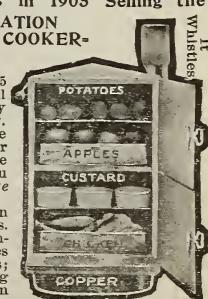
Guaranteed to save 50 per cent in fuel, labor, time, and provisions. A whole meal cooked over one burner on any style stove. It assures you deliciously cooked hot meals; 30 days' trial. No intermingling of odors or tastes. Fine for use in summer cottages. A necessity every day of the year. The only healthful way to cook foods and breadstuffs. :: Handsomely illustrated catalog free. "O-HI-O" COOKER CO., 908 Jefferson Ave., Toledo, O.

**PATENTS**

No attorney's fee until patent is allowed. Write for "Inventor's Guide."

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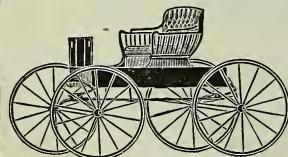
Don't buy a vehicle of any kind from any one until you write me for my wonderful Buggy Book. Write me today. A postal will bring the Book free.

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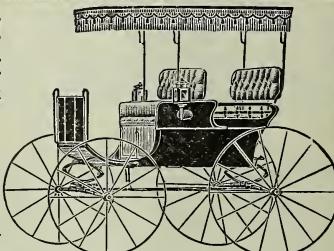
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No. 758. Spindle Seat Buggy  
Driving Wagon with 3 in. Guaranteed  
Rubber tires. Price complete, \$56.50.  
As good as sells for \$25.00 more.

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No. 333. Light Canopy Top Trap. Price complete, \$78.00. As good as sells for \$25.00 to \$30.00 more.

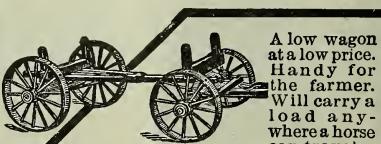
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